Ontario

Ontario Geological Survey
Open File Report 6181

Report of Activities, 2005 Resident Geologist Program

Thunder Bay North Regional Resident Geologist Report: Thunder Bay North District

2006

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ONTARIO GEOLOGICAL SURVEY

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Thunder Bay North Regional Resident Geologist Report:
Thunder Bay North District

by

M.C. Smyk, G.D. White, M.A. Magee and C.L. Komar

2006

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Ontario

Ontario Geological Survey
Regional Resident Geologist Program

Thunder Bay North Regional Resident Geologist (Thunder Bay North District)—2005

by

M.C. Smyk, G.D. White, M.A. Magee and C.L. Komar

2006

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THUNDER BAY NORTH REGIONAL RESIDENT GEOLOGIST—2005

M.C. Smyk[1], G.D. White[2], M.A. Magee[3] and C.L. Komar[4]

[1]Regional Resident Geologist, Thunder Bay North District, Ontario Geological Survey

[2]Staff Geologist, Thunder Bay North District, Ontario Geological Survey

[3]Acting District Geologist, Thunder Bay South District, Ontario Geological Survey

[4]Administrative Assistant, Northwest Region, Ontario Geological Survey

INTRODUCTION

The Thunder Bay North District encompasses Lake Nipigon and extends over 500 km north from Highway 11 to the Hudson Bay Lowland (Figure 1). The following communities are situated within the district: Angling Lake (Wapakeka First Nation (FN)); Armstrong; Beardmore; Bearskin Lake FN; Big Trout Lake (Kitchenuhmaykoosib Inninuwug FN); Cat Lake FN; Fort Hope (Eabametoong FN); Geraldton; Gull Bay FN; Jellicoe; Kasabonika FN; Kingfisher Lake FN; Lansdowne House (Neskantaga FN); Longlac; Macdiarmid; Nakina; North Caribou Lake (Weagamow FN); Osnaburgh House (Mishkeegogamang FN); Pickle Lake; Summer Beaver (Nibinamik FN); Webequie FN and Wunnummin Lake FN.

The authors note that, for ease of reading, all Web addresses were accessed on March 15, 2006, unless otherwise noted . All Universal Transverse Mercator (UTM) co-ordinates are reported in North American Datum 1983 (NAD83), Zones 15 and 16, unless otherwise noted.

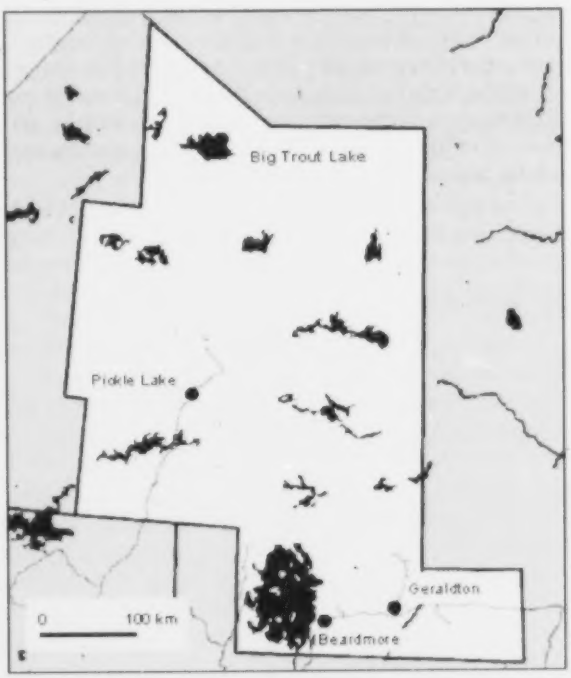

Figure 1. Location of the Thunder Bay North District.

MINING ACTIVITY

Mine production and reserves in the Thunder Bay North District for 2005 are shown in Table 1. Work completed within the Thunder Bay North District and filed for assessment credits, or otherwise provided, is shown in Table 2.

Musselwhite Mine

Musselwhite Mine (Placer Dome Inc. (68%) and Kinross Gold Corporation (32%)) is located 126 km north of Pickle Lake. Access to the mine site is by means of an all-weather airstrip or a 43 km, all-weather gravel road connecting the mine site to the northern extension of Highway 599. Musselwhite is a fly-in operation with pickup points in Thunder Bay and five northern communities. The mine employed 307 full-time employees and 108 contract personnel in 2004 (*Inside Musselwhite Mine* Newsletter, v.8, issue 1, Winter 2005). First Nation contractors provide air transportation and camp services (www.placerdome.com/operations/canada/musselwhite.htm).

The Musselwhite Mine is situated in the North Caribou greenstone belt of the Sachigo Subprovince. Mineralization is predominantly hosted within metamorphosed chemical sedimentary rocks (banded iron formations (BIFs)) and, in particular, within garnet-magnetite-grünerite BIFs (locally termed the Northern Iron Formation). All lithologies have been metamorphosed at mid- to upper amphibolite facies. (www.placerdome.com/operations/canada/musselwhite/geology.htm)

> "Although the mine-scale deformation is considered to form part of a progressive deformation event, it is possible to differentiate 4 local deformation events, with mutually cross-cutting timing features. D_1 deformation is represented by an isoclinal folding event that is only locally preserved. The D_2 deformation event is the dominant, and most easily recognized deformation event and is responsible for the large-scale folding of all lithologies and the development of very strong, local, axial-planar, penetrative fabrics. The D_3 event is considered to be syn- to late D_2 and is dominated by the development of ductile shear zones and areas of intense cleavage development. Gold mineralization is associated with the D_2/D_3 event. The location of mineralization is controlled by the intersection of D_3 shears zones and D_2-folded BIFs. These geological controls result in mineralized shoots, which plunge at approximately 15° to grid north, have a down-dip extent of up to 150 m, down-plunge continuation in excess of 1.5 km, and across-lithology width of up to 10 m. Mineralized zones are characterized by abundant pyrrhotite, quartz flooding and, rarely, visible gold." (www.placerdome.com/operations/canada/musselwhite/geology.htm)

In 2005, the mine reached a record high production of 250 383 ounces of gold from 1 476 584 milled t at a grade of 5.42 g/t Au (with a recovery rate of 95.01%; A. Cheatle, Placer Dome Inc., personal communication, February, 2006).

From 1997 to 2004, 9 837 960 t of ore were mined and milled to produce 1 706 294 ounces of gold (www.placerdome.com/operations/canada/musselwhite.htm). Proven and probable mineral reserves (at $400 per ounce gold) as of December 31, 2005, were 11 062 000 t at a grade of 5.674 g/t Au, for a total of 2 018.070 contained ounces (approximately 1.02 million ounces proven and 1 million ounces probable) (A. Cheatle, Placer Dome Inc., personal communication, March, 2006).

Table 1. Mine production and reserves in the Thunder Bay North District in 2005.

Mine	Production to end of 2004		Production in 2005		Reserves at end of 2005 (Proven + Probable) at $400 per ounce gold	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
Musselwhite Mine	9 837 960 t @ ~ 5.65 g/t Au	1 706 294 ounces gold	1 476 584 t @ 5.42 g/t Au	250 383 ounces gold	11 062 000 t	5.674 g/t Au

Exploration at the Musselwhite property continued to focus on the conversion of existing mineral resources to mineral reserves and the extension of known resources. Successful exploration continued on the PQ Deeps target with new reserve ounces being added to the C Block and Inferred Mineral resources being added to the B Block (A. Cheatle, Placer Dome Inc., personal communication, February 2006). Gold-mineralized zones have now been drilled as far north as 13,000N (i.e., 3 km north of the mill). Exploration will continue northwards on the main Musselwhite Structure. Additional success was achieved in the conversion of inferred mineral resources to indicated mineral resources in the PQ Deeps A1 Block and the Esker and Jets zones. 373 000 new discovery ounces of gold were added to the reserve total (A. Cheatle, Placer Dome Inc., personal communication, February 2006).

Pickle Crow Mine

Donald M. Ross (in trust) acquired ownership of the Pickle Crow gold project, located 10 km northeast of the community of Pickle Lake, from Cantera Mining in June 2005 (Mineral Development and Lands Branch files, Thunder Bay). Cantera Mining Ltd., which had been in the process of constructing a 225 ton-per-day mill and stockpiling ore from the No. 1 (Howells) vein at the Pickle Crow Mine, went into receivership in January 2004. A surface management agreement had previously been granted by Pickle Crow Gold Mines Limited (wholly owned by **Wolfden Resources Inc**.) to Cantera in June 2000 (*Canadian and American Mines Handbook*, 2005–2006, p.436). Wolfden Resources will become the operator of the project, which may begin gold production in early 2006. Bulk samples taken by Cantera from the No. 5 vein (470 t) and No. 1 vein (4302 t) had returned 19.2 g/t Au and 20.0 g/t Au, respectively (Cantera Mining Ltd., public presentation, 2002, Mineral Development and Lands Branch files, Thunder Bay).

EXPLORATION ACTIVITY

Fifty-six exploration programs were undertaken in 2005 (Table 3) in the Thunder Bay North District. Gold was the most sought-after commodity, followed by platinum group metals, base metals, uranium and diamonds. Mining Lands statistics for the Thunder Bay North District are shown below:

Claims Cancelled in 2005	Claims Staked in 2005	Active Claims at end of 2005
561 (totalling 3573 units)	357 (totalling 3573 units)	2872 (totalling 17 921 units)

ADVANCED EXPLORATION

Roxmark Mines Limited continued its Advanced Exploration program on the East Leitch–Sand River Mine property near Beardmore. Roxmark completed its 2005 operational program, including upgrading and commissioning of the Northern Empire mill in Beardmore, and surface sampling and milling of approximately 800 t of gold-bearing, quartz vein material from the East Leitch property (Roxmark Mines Limited, news releases, September 02, October 12 and November 23, 2005). The East Leitch bulk sampling program achieved 2 significant objectives: the debugging and commissioning of the mill and the generation of revenue. In September 2005, the gold circuit was commissioned at the mill, which had been inactive since 2001. Mill equipment now includes a new state-of-the-art Knelson Concentrator and Gemeni table to maximize gravity recovery, as well as the molybdenum flotation circuit, complete with disc filter and concentrate dryer. As a result of unforeseen faulting and folding at East Leitch, which resulted in extra waste rock being processed along with gold-bearing rock, the 125 ounces of recovered gold from the bulk sampling program was lower than anticipated.

Roxmark Mines Limited applied for Advanced Exploration status on its Nortoba–Tyson molybdenum property near Beardmore. The operating permits are expected early in 2006, allowing Roxmark to process surface-sampled material from the property. During the summer of 2005, Roxmark completed surface mapping, sampling and a diamond-drilling program. A key objective of the program was to assist in determining the size and character of molybdenum mineralization as a foundation for planning underground development and, ultimately, mining operations. The drilling program comprised 24 diamond-drill holes, totalling 1865 m. Mapping of the 13 trenches covering the strike length of a molybdenum-bearing quartz vein and subsequent geological interpretation were carried out. The diamond drilling extended the known 457 m strike length of the mineralized vein by an additional 260 m to the east, where it remains open to further extension. Previous drilling had intersected the molybdenum-bearing vein to a maximum depth of 117 vertical metres. However, drill hole No. 18 went through the main molybdenum-bearing structure and intersected parallel zones to the north with molybdenum-mineralized rock observed to depths in excess of 313 m before piercing a diabase sill at approximately 324 m vertically. Drill intersections of molybdenum-mineralized rock correlate well with the mineralization and assays in surface trenches of No. 3 vein. Preparation for a surface bulk sample is underway, with 3000 tons planned for extraction and milling in 2006. More specifically, the drilling program outlined a number of areas of interest, including a zone 300 feet long, located under trenches 4 through 7 inclusive, grading 1.71% MoS_2 over a 3.0 foot width in holes Nos. 4, 5 and 19. Another area, located 160 feet east of trench 13, contained an average grade of 1.62% MoS_2 over 3.0 foot width in hole No. 11. As a result, 2 areas have been marked for the surface bulk sample: the first is located under trenches

4 through 7; the second is under trenches 1 and 2, which have a previously reported grade of 2.48% MoS_2 over 2.07 feet. The average grade from the previous drilling and trenching was 1.73% MoS_2 over 3.0 foot width (similar to the results received from the drilling program). In addition, the Northern Empire mill was readied for the planned processing of molybdenum ore in 2006 (Roxmark Mines Limited, news release, November 23, 2005).

Gold

NORTH CARIBOU LAKE AREA

Placer Dome North America Ltd. carried out a number of exploration projects in the vicinity of the Musselwhite Mine (*see* "Mining Activity").

PICKLE LAKE AREA

King's Bay Gold Corporation and **Richview Resources Inc.** received the final assay results of the last 6 holes from their 2004 Pickle Lake joint-venture drilling program (King's Bay Gold Corporation, news release, January 19, 2005). From June 1 to December 31, 2004, 35 holes were drilled at a cost of approximately $1 million. The diamond-drill holes intersected numerous gold-bearing zones near surface (≤500 feet) in a large, strongly of this 2004 drilling program included 11.059 g/t Au across 10.0 feet and 3.789 g/t Au across 10.0 feet (in drill hole PL04-29); 4.023 g/t Au across 5.0 feet (PL04-06); 2.199 g/t Au across 22.5 feet (PL04-27); 9.634 g/t Au across 4.0 feet (PL04-26); 4.075 g/t Au across 8.0 feet (PL04-19); 3.571 g/t Au across 7.5 feet (PL04-22); 4.021 g/t Au across 5.0 feet (PL04-04); 5.778 g/t Au across 5.0 feet (PL04-05); 7.007 g/t Au across 10.0 feet (PL04-22); and 7.311 g/t Au across 20.0 feet (PL04-26). No follow-up work was reported in 2005. A minimum proposed expenditure of $250 000 has been earmarked for the Pickle Lake joint venture in 2006 (King's Bay Gold, Quick Report presentation, February 2006).

Canadian Golden Dragon Resources Ltd. optioned the Dorothy Lake gold property in the Meen–Dempster greenstone belt, 70 km west of Pickle Lake (Canadian Golden Dragon Resources Ltd., news release, January 11, 2005). Historic diamond drilling on the property outlined a gold resource, which was reported in *The Northern Miner* on June 11, 1990 (236 220 t grading 6.17 g/t Au). Diamond drilling was performed by the previous property holders, Major General Resources and Umex, on the Main and West gold zones.

Canadian Golden Dragon Resources Ltd. also optioned the Dobie Lake gold property in the Meen–Dempster greenstone belt, 70 km west of Pickle Lake (Canadian Golden Dragon Resources Ltd., news release, September 01, 2005). Previous diamond drilling of the Dobie Zone outlined 301 000 t averaging 5.5 g/t Au; the deposit is open down-plunge (Seim 1993). Sufficient exploration expenditures must be incurred to maintain the property in good standing.

FORT HOPE AREA

Landore Resources Canada Inc. conducted a diamond-drilling program on its Miminiska Lake gold property, west of Fort Hope, comprising 13 diamond-drill holes totalling 3921 m (Landore Resources Limited, news release, June 23, 2005). The drill program was designed to test the down-dip and down-plunge extensions of iron formation-hosted, high-grade gold intersections returned from the previous drill campaign, including 9.8 g/t Au over 3.5 m in hole 0604-33, 132.1 g/t over 0.5 m in hole 0604-32 and 6.0 g/t Au over 3.5 m in hole 0603-31. The 2004–2005 program succeeded in proving the depth extension of the targeted mineralized zones to a vertical depth of 250 m with high-grade gold zones intersected in most holes. The best intersections included 8.7 g/t Au over 0.6 m in hole 0604-36, 6.6 g/t Au over 1.5 m in hole 0605-42 and 9.7 g/t Au over 1.1 m in hole 0605-43. Drill hole 0604-37, designed to test the up-plunge extension of mineralization in hole 0604-33, also intersected the target zone 80 m up-plunge, returning an assay of 6.0 g/t Au over 2.0 m.

Nustar Resources Inc. and **Candor Ventures Corp.** drilled their Miminiska Lake gold property, west of Fort Hope. A seven-hole, 1609 m drill program was completed (Nustar Resources Inc., news release, April 6, 2005). The holes were designed to test induced polarization anomalies associated with a folded iron formation where previous drilling had intersected visible gold. No intersections of economic significance were returned in this phase of drilling. The TSX Venture Exchange granted final approval for the amalgamation of Candor Ventures Corp. and Nustar Resources Inc. to form **Canstar Resources Inc**., and the amalgamation became effective (news release, April 07, 2005).

MetalCORP Limited began exploration on their Keezhik Lake property, northwest of Fort Hope (MetalCORP Limited, news release, October 12, 2005). The Hansen showing yielded values of 12.2 g/t Au, 8.6 g/t Au and 8.4 g/t Au from grab samples. This zone is slated to be a high priority in a subsequent, phase 2 program. A second gold showing (KL-12) is associated with a sheared and altered quartz-feldspar porphyry (QFP) stock. Sampling from 2 of 4 previously tested gold zones on this part of the property yielded between 1.2 g/t Au and 16.5 g/t Au from 10 of 16 grab samples taken from this zone. Prospecting and sampling from 60 to 550 m west of the KL-12 Zone, but still within the QFP stock, led to the discovery of 5 new, closely spaced, gold occurrences, which were labelled String 1, 2, 3, 4, and 5, respectively, from east to west. The following analyses were obtained: 0.2 to 3.0 g/t Au (String 1), 0.5 to 1.9 g/t Au (String 2), 0.3 to 1.4 g/t Au (String 3), 1.7 g/t Au (String 4), and 1.0 g/t Au (String 5). Grab sampling from the KL-18 Zone yielded values up to 14.8 g/t Au. A two-phase, $1 million exploration program was recommended.

ONAMAN–TASHOTA AREA

Kodiak Exploration Limited conducted an in-fill geophysical survey on its Knucklethumb polymetallic project, west of Nakina, in preparation for drilling (Kodiak Exploration Limited, news release, January 17, 2005). Compilation of the 2004 exploration program on the under-explored Vent area identified several high-priority drill targets that coincided with both geophysical and geochemical anomalies. Kodiak completed a diamond-drill program which totalled 4415 m in 31 holes in 6 different locations (news release, May 30, 2005). The second phase of exploration on the Knucklethumb project started in mid-June, 2005 and included mechanical stripping and channel sampling in the Vent, Aidan and Dyer Lake (Leiber zone) areas, prospecting of recently logged areas and detailed geological and structural mapping (news release, September 02, 2005). In addition, the Titan 24 deep induced polarization (IP) survey was conducted in the Vent area to determine the depth extent of sulphide mineralization in the vicinity of the gold-silver-mineralized rocks on surface, and to identify deep drill targets. The exploration program on the Vent Prospect (news release, September 21, 2005) consisted of mechanical stripping, channel sampling, detailed geological mapping, humus sampling and a Titan 24 geophysical deep-penetrating IP survey, which collectively were successful in expanding and understanding the known parameters of the gold-silver mineralization at the Vent Prospect, in an alteration zone approximately 2.5 km in length and up to 800 m wide. Mechanical stripping and channel sampling discovered a mineralized interval grading 11.88 g/t Au and 25 g/t Ag over a true width of 1.0 m. Kodiak announced the start of a planned 2000 m drilling program on the Vent area (news release, January 13, 2006). In April 2005, a shallow drill hole in this area intersected 33.1 m of gold-mineralized rock, which returned assay values between 0.1 to 2.7 g/t Au.

Spruce Ridge Resources Ltd. completed a diamond-drilling program on the Spruce Hull Lake property in Oboshkegan Township, west of Nakina (Spruce Ridge Resources Ltd., news release, August 3, 2005). The drilling program was originally intended to test the North and South groups of gold occurrences that were discovered during the 2003 and 2004 seasons, respectively. An early spring thaw in 2005 made the South showings inaccessible, and all 11 drill holes (totalling 893 m) were drilled on the North zone. All but two of the holes intersected zones of sericitized, chloritized and/or silicified volcanic rocks, with associated, disseminated sulphide mineralization. All the holes gave at least one anomalous (>0.125 g/t Au) gold assay. The highest individual assay from the program was 2.40 g/t Au over 0.65 m in Hole HL05-05. Spruce Ridge continued its stripping and channel sampling program until mid-November, focussing on an area approximately 100 m south of the South Hull occurrence. Spruce Ridge had earlier announced that a program of stripping carried out in the fall of 2004 located a new zone of gold mineralization, 1200 m southeast of the area of widespread gold-mineralized zones discovered and stripped in 2003 (Spruce Ridge Resources Ltd., news release, January 25, 2005). Channel sampling of the Black Dog zone returned an average of 3.03 g/t Au across 4.50 m, including a 0.30 m section carrying 30.87 g/t Au, where visible gold was observed.

The 2005 stripping was carried out to the south and west (i.e., across strike) from the Black Dog zone, which was stripped in 2004 (news release, February 02, 2006). Together, 2 stripped areas exposed an altered and mineralized area that is a minimum of 200 m long by 115 m wide. The company has uncovered a quartz porphyry dike, southwest of the Black Dog zone that returned gold values over a 5 m width. Channel samples returned assays up to 39.01 g/t Au over 0.90 m. The iron carbonatized-dike has been exposed over a length of 43 m and carries disseminated pyrite throughout. It is cut by numerous narrow quartz stringers, which contain specks of visible gold. The gold-bearing stringers become noticeably more abundant towards the eastern end of the stripped area. Eleven metres along strike to the east of the main stripped area, another small stripped area exposed what appears to be the same quartz porphyry dike, also with quartz stringers carrying visible gold. The full width of the dike is not exposed here, but it is at least 11 m wide. Five grab samples of mineralized porphyry from the eastern extension (without visible gold) returned assays ranging from 0.04 to 4.03 g/t Au. The porphyry dike lies within a 55 m long and 60 m wide stripped area that exposes altered and mineralized metavolcanic rocks. Preliminary sampling over other parts of the stripped area indicated that it carries mostly low gold values (<1 g/t Au) with local enrichment in and around narrow quartz stringers with visible gold. One grab sample from a 5 cm quartz vein returned an assay of 91.58 g/t Au. In the eastern part of the stripped area, to the north of the porphyry dike, an intensely folded graphitic schist and the adjacent metavolcanic rocks contain pyrite bands and lenses over a 10 by 15 m area. Twenty-three grab samples from this area returned assays between 0.12 and 12.68 g/t Au, with an average of 4.32 g/t Au. The outer limits of this system have yet to be defined (news release, February 02, 2006). Line cutting and geophysical survey began in early 2006. In addition to further stripping and in-fill channel sampling, the company plans a program of diamond drilling to test the full width of this gold-mineralized zone.

East West Resource Corporation acquired the Adair gold property in the Metcalfe Lake area, west of Nakina (East West Resource Corporation, news release, April 13, 2005). Cost of acquisition and exploration was shared between **Maple Minerals Inc.** (a division of **Mega Uranium Ltd.**) (50%) and East West (50%). Prospecting, line cutting, magnetic and induced polarization surveys were completed to trace a north-trending vein structure (East West Resource Corporation, news release, November 29, 2005). Historical assays of 14.86 ounces gold per ton from mine dump material was reported by the Ontario Division of Mines in 1974 and a 33-ton bulk sample taken by the Ontario Department of Mines in 1935 returned 0.44 ounce gold per ton (news release, April 13, 2005). A single grab sample of quartz vein material, taken by the company field crew in November 2005 returned 678 g/t Au and 256 g/t Ag. Disseminated pyrite, chalcopyrite and galena occur in the vein. The sample also returned 2540 ppm Cu, 5380 ppm Pb, 125 ppm Bi and 14.5 ppm Te. The geophysical survey traced the fault or shear structure associated with the Adair vein across the 2.8 km length of the property. A parallel shear structure associated with the neighbouring Knapp gold prospect was acquired from 2 prospectors. Six lines of IP surveys put over this zone traced the southern end of the vein for 800 m.

Superior Canadian Resources Inc. carried out a work program of detailed sampling, mapping and prospecting on the Aurum gold property, located north of Nakina at O'Sullivan Lake, to evaluate specific anomalies resulting from the recent time-domain electromagnetic (TDEM) survey. Based on the results of the field work, an early fall diamond-drilling program to further evaluate the various gold targets is possible (Superior Canadian Resources Inc., news release, September 06, 2005).

BEARDMORE–GERALDTON AREA

Spruce Ridge Resources Ltd. optioned and completed a preliminary program of stripping and channel sampling on its Nora Lake (Wenzoski) property, east of Beardmore (Spruce Ridge Resources Ltd., news release, November 01, 2005). The main mineralized zone consists of mafic metavolcanic rocks cut by an irregular body of quartz porphyry; both rock types are intensely sheared, carbonatized and silicified and cut by irregular quartz tourmaline veins, and host pyrite and arsenopyrite. This zone was exposed over a length of 240 m and a width of 24 m; the full width of the zone was not determined. Seventeen channel samples were cut over widths varying from 0.30 to 10.67 m in the main stripped area and returned results including 8.42 g/t Au across 3.35 m; 6.69 g/t Au across 1.22 m; 6.14 g/t Au across 0.61 m; and 1.14 g/t Au across 8.53 m. The main stripped area exposed mineralized rocks over a length of 120 m and a width of at least 24 m. Additional stripping on strike to the east and west gave the zone a minimum length of 240 m. No sampling was carried out on the eastern and western stripped areas. In addition to further stripping and in-fill channel sampling, the company plans a preliminary program of diamond drilling to test the full width of the mineralized zone.

Alto Ventures Ltd. conducted exploration programs on its Mud Lake and Coté–Archie Lake projects, northeast and northwest of Beardmore, respectively (Alto Ventures Ltd., news release, July 27, 2005). Alto's program at Mud Lake included geological mapping, prospecting and IP geophysical surveying (Alto Ventures Ltd., news release, September 19, 2005). The program has identified 9 gold showings along a 6 km long, northeast-trending strain corridor of sheared granodiorite. Gold occurs principally within quartz veins and areas of silicification and is associated with minor amounts of pyrite and chalcopyrite. Highlights of assay results from grab samples include

Showing	Assay (g/t Au)	Location
No. 1	30.00	Northeast end of property
No. 2	5.30	1000 m southwest of No. 1
No. 3	4.08	500 m southwest of No. 2
No. 4	5.49	400 m southwest of No. 3
No. 5	6.57	200 m southwest of No. 4
Oliver Severn	50.61	800 m southwest of No. 5
No. 6	19.81	1600 m southwest of Oliver Severn
Clarke	8.06	700 m southwest of No. 6
Clarke Extension	7.94	150 m southwest of Clarke

Alto also completed 16.9 km of IP geophysical surveying to test 2.1 km of the auriferous shear zone, including the No. 3, No. 4, No. 5 and Oliver Severn showings. The survey identified numerous IP responses and over 20 prospective targets have been recommended for follow-up testing, including diamond drilling.

At Coté–Archie Lake, mapping, stripping and channel sampling were completed. Initial exploration on the property, involving prospecting, trenching, and preliminary sampling, has resulted in the identification of 2 gold occurrences including an east-northeast-trending shear zone, up to 12 m wide, believed to represent the strike projection of the structure hosting the Leitch Mine veins approximately 5 km to the west (www.altoventures.com).

Freewest Resources Canada Inc. announced the completion of business transactions with **Teck Cominco Limited** (Freewest Resources Canada Inc., news release, September 13, 2005). Freewest may earn a 100% interest in the Adel property, 60 km east of Geraldton. Prospecting and sampling by Freewest in 2005 suggested that a stratigraphic and structural corridor extends eastward from the Geraldton gold camp through Longlac and beyond to the Adel property. Stripping and detailed sampling was undertaken on a 40 m wide altered and mineralized zone which had returned up to 18 g/t Au from silicified, sulphidized (pyrite, arsenopyrite) banded iron formation and quartz porphyry (J. Paakki, Teck Cominco Limited, personal communication, January, 2005; *see* "Property Examinations").

Buck Lake Ventures Ltd. carried out some follow-up geological work on their Gwyn Lake property, east of Beardmore. Initial sampling in 2004 returned encouraging gold values in banded iron formation, quartz-feldspar porphyry and metasedimentary rocks (Smyk et al. 2005).

Hardrock Extension Inc. raised $400 000 and drilled their Hardrock property just east of Geraldton near Kenogamisis Lake (M. Malouf, Hardrock Extension Inc., personal communication, February 2005).

The local prospecting community was very active in the Beardmore–Geraldton area. Prospectors such as R. Coté[PE], N. Cox, H. Goodman, Jr., L. Holt, F. Houghton, A. Lafontaine[PE], C. Lance, M. Nelson, and C. Pettit worked on their respective gold properties in 2005 ([PE] *see* "Property Examinations").

Copper-Nickel-Platinum Group Elements (PGE)

Canadian Golden Dragon Resources Ltd. and **Canplats Resources Corporation** completed a drill hole on the Grand Bay nickel-copper-PGE property to test a coincident magnetic and gravity anomaly adjacent to the Black Sturgeon fault (Canadian Golden Dragon Resources Ltd., news release, January 25, 2005). The target is interpreted to be a lherzolite or picrite that would have the potential for hosting a nickel-copper-PGE zone similar to the Seagull intrusion 60 km to the south. Canplats has earned a 50% interest in the property since the start of the option agreement in 2001 and has the right to earn a 75% interest when a total of $500 000 has been spent.

Cascadia International Resources Inc. conducted geophysical surveys and drilling on the Norton copper-nickel-PGE project, northeast of Fort Hope (Cascadia International Resources Inc., news release, February 22, 2005). Cascadia has an option to earn a 50% interest in the property from **East West Resource Corporation** and **Canadian Golden Dragon Resources Ltd.** Several diamond-drill holes on the Norton deposit have had down-hole pulse electromagnetic (EM) surveys conducted on them. Other anomalies were tested with ground horizontal loop EM (HLEM). The companies later reported (news release, March 31, 2005) that the widest intersection to date (15.1 m in hole NL05-12) yielded a weighted average of 1.21% Ni over a 10.62 m core length. Values of 0.64% Cu and 1.12 pounds Co were returned, with 0.89 g/t Pt+Pd. Assays for holes NL05-10 and NL05-11 (news release, April 06, 2005) included 2.02% Ni over 1 m in hole NL05-11. A 5.81 m interval in hole NL05-11 returned 1.26% Ni, 0.35% Cu, 0.9 pound Co and 0.71 g/t Pt+Pd. The companies later reported that drilling of the main Norton Zone had been completed on what is believed to be the western margin of the deposit (holes NL05-19, -20, -21, -22) Canadian Golden Dragon Resources Ltd., news release, August 23, 2005). Of note, hole NL05-19 intersected 6.57 m of 1.16% Cu, 1.08% Ni, 0.94 pound Co and 0.82 g/t Pt+Pd, whereas hole NL05-22 intersected 6.37 m grading 0.98% Cu, 0.72% Ni, 0.93 pound Co and 0.66 g/t Pt+Pd. An Independent Mineral Resource Estimate for the Norton Lake deposit was calculated using a 0.3% Ni cut-off (Cascadia International Resources Inc., news release, December 12, 2005).

	Tonnes	Nickel (%)	Copper (%)	Cobalt (%)	Palladium (g/t)
Measured	1 769 721	0.67	0.61	0.03	0.46
Indicated	488 933	0.67	0.61	0.03	0.47
Total	2 258 654	0.67	0.61	0.03	0.46
Inferred	198 571	0.66	0.59	0.03	0.47

Landore Resources Canada Inc. carried out several drilling campaigns on their Junior Lake and Lamaune Lake copper-nickel properties, east of Armstrong, in 2005. Thirteen diamond-drill holes (0405-25 to 0405-37), totalling 1707 m, were initially drilled on 5 separate target areas, including a three-hole fence on the "VW zone" at Ketchikan Lake (Landore Resources Limited, news release, October 12, 2005). Two other areas, the "New" and the "PQ" zones, returned significant drill results with values up to 1.2% Cu and 0.2% Ni in sub-metre to metre intervals within mineralized zones over 80 m wide. The VW zone comprises 5 mineralized horizons within the Carrot Top sequence, a laterally extensive complex 300 to 600 m thick, of mafic metavolcanic flows, ultramafic schists, clastic and chemical metasedimentary rocks, which has a known strike length of approximately 14 km and is host to several nickel, platinum group element, chromium and zinc-copper occurrences. Following the highly encouraging results from this drilling campaign, additional drilling started in mid-October to further evaluate the VW zone in the Ketchikan Lake area and strike extensions of the mineralized structure, focussing on areas where high conductivity anomalies are evident. Additional claims were also staked.

The drilling campaign completed on the adjacent Lamaune Lake property in mid-2005 consisted of 17 diamond drill holes (1105-01 to 1105-17), totalling 2599 m, on 4 separate target areas. The main target area, designated as the "Carrot Top zone", is also within the Carrot Top sequence and is located approximately 11 km along strike and to the northwest of the Ketchikan Lake discovery. This area had been previously sampled by Landore in 2003 and returned assay values of up to 0.33% Ni, 0.34% Cu, 200 ppm Co, 1200 ppb Pd and 260 ppb Pt. Eleven holes were drilled to test this target, with the remaining 6 holes testing 3 AeroTEM airborne anomalies. Drilling at the Carrot Top zone has been successful in intersecting several zones of nickel-copper mineralization with elevated cobalt and palladium values. Mineralized intersections within the Carrot Top zone include 0.25% Ni and 0.19% Cu over 11.3 m. Following completion of this drilling campaign, Landore met all requirements to fulfill the first stage of the option agreement to earn 51% of the Lamaune property.

Following the highly encouraging results from the June drilling campaign, an additional 10 diamond-drill holes (0405-38 to 0405-47), totalling 3875 m, were completed on the VW zone (news release, December 08, 2005). Hole 0405-40 intersected 0.44% Ni over 40.1 m (including 3 high-grade intervals of 1.37% Ni over 4.0 m, 0.86% Ni over 3.9 m and 1.24% Ni over 2.6 m). A total of 23 holes, totalling 5579 m, were completed at Junior Lake, while 17 holes, totalling 2599 m, were completed at Lamaune Lake (news release, February 07, 2006). A 6000 m diamond-drill program is scheduled to commence in early April 2006 to test the up-dip extensions of the high-grade intersections, fill in between the sections to determine the geometry of the mineralized zones and provide core for metallurgical testing. Upgrading of the camp and infrastructure is underway. Another 3000 m of drilling will be carried out on the highly prospective PQ zone, located to the east of the existing B4-7 nickel-copper deposit and the Carrot Top zone on the Lamaune Lake property (news release, February 07, 2006). A review of the historical resource estimate of the B4-7 massive sulphide deposit (with a historical estimate of 2.3 million tons at 0.87% Ni and 0.58% Cu) on the property will be conducted.

Richview Resources Inc. acquired the Thierry Mine from its joint-venture partner **PGM Ventures Corporation** (Richview Resources Inc., news release, January 03, 2006). Richview completed a drill program on the property and is conducting environmental and metallurgical studies. Results and interpretation of this work including a resource estimate were expected in early 2006. Between October 2004 and March 2005, a total of 15 holes (totalling 32 347 feet) were drilled on the Thierry property (Richview Resources Inc., news releases, June 20, 2005 and January 25, 2006). The drilling confirmed that the mineralized zones are continuous along strike and extend to a depth to 3000 feet. The main mineralized zone is traceable over a 6000-foot strike length. There also appear to be several steeply plunging, higher grade mineralized zones within the main shear that should be the focus of future exploration programs. Significant mineralization was intersected in each drill hole in this program. Examples include 2.21% Cu, 0.25% Ni, 900 ppb Pt, and 1.4 g/t Pd over 37.3 feet, and 2.05% Cu, 0.2% Ni, 190 ppb Pt and 570 ppb Pd over 51.6 feet, both in hole PGM-04-28, as well as 6.85% Cu and 0.43% Ni over 10.2 m in hole PGM-04-51 (news release, January 25, 2006). The focus of the drill program was the CBS shear zone, a chlorite- and biotite-bearing schist, which hosts the bulk of the sulphide-mineralized zones. In addition, significant chalcopyrite and pyrrhotite mineralization has been noted in fractured and brecciated mafic metavolcanic rocks outside of this main shear. The northeasterly trending CBS shear zone has been traced for over a 6 km strike length east and west of the Thierry Mine. Between October and December 2005, 8 diamond-drill holes were completed, totalling 14 968 feet (news release, January 30, 2006). These holes targeted the mineralized zones in and around the 1200-foot level at various locations across the Thierry Mine deposit. This in-fill drilling was undertaken and designed to supplement limited historic data, which are necessary to demonstrate the continuity of the mineralization, and to validate the drilling and sampling undertaken by the previous operator, Union Minière Exploration and Mining Corporation (Umex), during the period 1978 to 1982 when the mine was operational. In addition to the copper and nickel values, there are significant amounts of platinum, palladium, gold and silver. The program demonstrated the continuity of the mineralized zones at the 1200 foot level. It also tied the intersections to the current and historic drilling intersections at deeper levels in the mine. The mineralized zones appear to be continuous along a 6000-foot strike length to depths of up to 3000 feet and widths up to 125 feet. A resource estimate based on the recent re-compilation of all available data is currently in progress. Richview is completing a detailed re-interpretation of all the existing data to redefine the known mineralized zones with an emphasis on outlining zones for a resource calculation. In addition, a detailed evaluation of the relationships between the economic minerals is currently being undertaken. In preparation for proceeding with the next phase of the exploration of the Thierry Mine property, the company has conducted an environmental review and submitted an application to obtain the permits necessary to de-water the mine workings for future underground exploration. A representative selection of mineralized drill core samples (totalling 400 kg) was submitted for preliminary metallurgical testing in order to assess metal recoverability (news release, January 30, 2006). An ore reserve, generated by Umex at the time of mine closure in 1982, was 15.5 million tonnes grading 1.98% Cu (*Canadian and American Mines Handbook*, 2005–2006, p.325).

Superior Canadian Resources Inc. started their 2005 summer field program by assessing the results of a helicopter-borne magnetic and TDEM survey on their Sim Lake copper-nickel-PGE property, northwest of Nakina (Superior Canadian Resources Inc., news release, June 07, 2005). Geological mapping, prospecting and sampling of the 5 specific clusters of anomalies spread over the claims were undertaken (Superior Canadian Resources Inc., news release, July 13, 2005). A total of 30 grab samples were taken from mafic intrusive rocks. The highlights of the sampling included one sample that returned 227 ppb Pt, 58 ppb Pd and 29 ppb Au. Four other samples returned between 24 and 52 ppb Pt (Superior Canadian Resources Inc., news release, September 06, 2005). In March 2006, Superior Canadian entered into an agreement with Stillwater Mining Company to continue exploration on the

property; diamond drilling is tentatively scheduled for March, 2006 (News Release, Superior Canadian Resources Inc., March 08, 2006).

East West Resource Corporation and **Maple Minerals Corp.** (a division of **Mega Uranium Ltd.**) carried out geological mapping and sampling in June 2005 to trace the PGE horizon that occurs on the southwestern part of the Eva–Kitto property, southwest of Beardmore (East West Resource Corporation, 2005 Annual Report). Some prospecting, mapping and drilling was carried out by Kennecott Canada Exploration Inc. in 2003 and 2004.

Kodiak Exploration Limited discovered 2 zones of copper-nickel mineralization that are associated with a cluster of geophysical anomalies in a 2 km by 1 km gabbro body on the Knucklethumb Lake property, west of Nakina (Kodiak Exploration Limited, news release, September 28, 2005). The new find, dubbed the Snake Zone, was discovered 30 m west of the Aidan showing. It has been traced westward over a strike length of 165 m. A second zone (J-5), is offset 40 m from the Snake zone, and has been traced over a strike length of 50 m. The Aidan zones have a combined strike length of 215 m. Channel samples have returned assays of up to 1.03% Cu and 0.52% Ni over a true thickness of 3.85 m. Another returned values of up to 0.58% Cu and 0.78% Ni over a width of 2.0 m. Channel samples also returned values of up to 0.10% Co, 0.3 g/t Pd and 0.6 g/t Pt. Grab samples of up to 0.9% Cu with 0.3 g/t Au have been found associated with an ultramafic unit in a 400 m long IP anomaly, 500 m southwest of the Aidan showing. The discoveries lie along strike from the Aidan showing and were made as a result of mechanical stripping of a cluster of geophysical anomalies within the gabbro.

Diamonds

Northern Shield Resources Inc. staked 14 kimberlite targets near Nakina (*CNW Newswire*, April 10, 2005). The targets were identified from airborne magnetic data purchased from the Ontario Geological Survey. Several of the targets are located under circular lakes with other targets coinciding with resistivity lows, both these attributes support the possibility that the targets may be kimberlite pipes. Heavy mineral samples from the Red Rover property near Nakina were analyzed for kimberlite indicator minerals; results were not reported. Northern Shield also holds the Century diamond property, east of Longlac.

Trigon Exploration Canada Ltd. and **Pele Mountain Resources Inc.** have a joint venture on the Alliance project, northwest of Nakina. The Alliance project covers a large area at the southwestern fringe of the James Bay Lowland, west and southwest of the upper reaches of the Albany River. Project operator Trigon Exploration Canada Ltd. completed an initial field program in which ground geophysical surveys were conducted over 6 separate kimberlite targets (Pele Mountain Resources Inc., news release, March 22, 2005). Trigon also used a proprietary helicopter-portable, reverse-circulation drilling system to obtain overburden samples. Summer work included use of a 4680 line-kilometres proprietary airborne magnetic survey system on closely spaced lines, followed by targeted heavy mineral and Mobile Metal Ion (MMI) sampling to prioritize drill locations (Trigon Exploration Canada Ltd., news releases, August 16, and November 10, 2005). Exploration on the Alliance project is funded by Trigon, which can earn up to a 60% interest in both the Alliance and Attawapiskat River projects from Pele Mountain by spending $3 million over a three-year period. There are now 58 staked targets on the Alliance project (Pele Mountain Resources, news release, November 14, 2005). Trigon announced the start of a winter exploration program in early 2006 (news release, February 01, 2006). The program will begin with ground magnetic surveys over at least 37 kimberlite targets previously identified by airborne geophysical and geochemical exploration. The ground surveys will assist in generating locations for drilling, which is expected to begin in late February using Trigon's lightweight reverse-circulation drilling rig.

Trigon Exploration Canada Ltd.'s Viking Project covers a four-million acre area of interest southeast of the Alliance property. The project was based on a 2004 reconnaissance sampling program that recovered abundant kimberlite indicator minerals (KIMs). The 2005 summer program at Viking included the collection of approximately 80 heavy mineral samples to verify the up-ice cut-off of the KIM source areas and has been followed by a high-resolution airborne magnetic survey to define targets for a possible drill program (Trigon Exploration Canada Ltd., news release, October 26, 2005). Trigon flew a 5200 line-kilometres, high-resolution, airborne magnetic survey over the suspected source area of the KIMs using a proprietary magnetic system. After interpretation of the airborne data, 11 high-priority targets were staked. Trigon initiated a second field program, consisting of ground-checking additional anomalies, prospecting and target-specific heavy mineral and Mobile Metal Ion (MMI) sampling. Drilling is planned for 2006.

Superior Diamonds Inc. explored a large area of the Sachigo Subprovince, including their "AEM" project area using proprietary magnetic data. A large land position has been acquired on the basis of kimberlite indicator mineral (KIM) sampling and closely spaced airborne magnetic surveys (Superior Diamonds Inc., news release, April 28, 2005). A drilling program began in July to test for kimberlite pipes. Over the past few years, the company completed several phases of overburden sampling and a closely spaced, high-sensitivity magnetic survey. The magnetic survey defined numerous pipe-like targets and 90 claim groups, totalling 20 912 ha were staked. A majority of the claim groups cover bull's-eye magnetic anomalies within the northwest-trending Stull–Wunnummin fault zone, parallel to the Kenyon fault zone, which is the main control for the Victor kimberlite cluster (Superior Diamonds Inc., news release, June 16, 2005). The company negotiated a comfort letter with the Neskantaga First Nation and used their facilities for logistical purposes for the first half of the program.

De Beers Canada continued to work on their numerous claim blocks scattered throughout the northern half of the Thunder Bay North District. Drilling was reported on Kasabonika FN traditional trapline areas, where 39 drill holes had been planned (*Northern Ontario Business*, March 31, 2005).

SouthernEra Diamonds Inc. staked a number of claims throughout the Thunder Bay North District in late 2005. These include properties acquired in the North Caribou Lake and Fort Hope areas (MNDM Mines and Minerals Division, Mining Lands, on-line Mining Claims Information (http://www.mci.mndm.gov.on.ca/claims/clm_intr.cfm): Client Reports, as of February 2006).

Volcanogenic Massive Sulphide (VMS) Copper-Zinc

MacDonald Mines Exploration Ltd. reported on 9 holes drilled in November and December 2004 on the Big Mac and MacNugget properties in the James Bay Lowland east of Webequie, thereby completing Phase III of the eighteen-hole, 2004 reconnaissance anomaly drilling program (MacDonald Mines Exploration Ltd., news release, January 24, 2005). In the light of new VMS discoveries, systematic further evaluation is continuing on the other geophysical anomalies found during helicopter-borne magnetic–versatile time-domain electromagnetic (VTEM) surveys flown in January–February 2004. The new MacDonald VMS discoveries are directly along strike from significant VMS discoveries by Spider–KWG to the east and south of the company's project sites, all in the McFaulds Lake area. During the MacNugget campaign, 6 VTEM anomalies were drilled; 4 of which intersected massive sulphides consisting of pyrite, pyrrhotite, chalcopyrite and sphalerite. Hole MN-3 returned 1.5 m averaging 2.1% Cu and 1.3% Zn, as well as 7.1 m averaging 0.79% Cu. The company planned to award a ground geophysics contract in January 2006. This program will determine drill targets by conducting a transient EM survey over previously drilled discovery holes which identified highly mineralized VMS type Cu-Zn deposits (news release, January 03, 2006). The company used Webequie FN's infrastructure and services.

Nuinsco Resources Limited conducted a geophysical survey on its Muriel Lake property, north of Nakina, and identified 2 strong, east-striking, conductive trends (Nuinsco Resources Limited, news release, May 03, 2005). A total of 30.5 line-kilometres of UTEM® (University of Toronto electromagnetic) geophysical data on 18 grid lines was collected over the central part of the claim group. A strong, continuous, geophysical anomaly located north of the grid baseline extends for 1300 m and appears to be on strike with known base metal occurrences. The anomaly is believed to be coincident with an airborne anomaly identified by Texasgulf in the 1970s. South of the baseline, a weaker, discontinuous UTEM® anomaly occurs over 800 m of strike along strike from the J.J. Perry, Kindle, Galena Vein, and Galena Vein Extension occurrences. Other unnamed sulphide occurrences are nearby. The company carried out a backhoe trenching program over the UTEM® anomalies in the central and southern parts of the property (news release, September 01, 2005). Nuinsco prospecting crews had earlier visited numerous outcrops and untested copper-mineralized showings on the property in order to plan the trenching program. Samples returned from 24 to 9740 ppm Cu; 40% of samples returned >500 ppm Cu. Anomalous gold and silver are also reported from the samples. Several massive and stringer sulphide showings occur on the property, associated with variably altered volcanic rocks. They consist of pyrite and pyrrhotite with varying amounts of chalcopyrite and sphalerite. Historic sampling from local showings has produced a wide range of anomalous values up to 16.22% Cu from the J.J. Perry trench and 5.8% Zn from the Galena Vein trench. Prospecting in the area, dating to the 1920s, has identified numerous base metal showings, but little exploration has been conducted until recently.

Iron Oxide-Copper-Gold

East West Resource Corporation and the **Ethelburga Group** completed a 720 line-kilometres airborne TDEM survey on their Armstrong property, south of Armstrong (East West Resource Corporation, news release, January 24, 2005). Three drill holes started in late 2004 on the gabbro were completed by January 13, 2005. The Armstrong project evolved from the Red Granite uranium-thorium-rare earth element (REE) project and covers a previously undiscovered, Mesoproterozoic layered, mafic complex beneath the Nipigon sills and a previously unrecognized, flat-lying volcanic unit. Additional claims were staked covering a 10 km by 10 km area and a helicopter-borne TDEM and magnetic survey was flown in January–February 2005.

ValGold Resources Ltd. optioned the Roy-Can iron oxide-copper-gold (IOCG) property, south of Lake Nipigon in the Black Sturgeon Lake area (ValGold Resources Ltd., news release, February 24, 2005). The Roy-Can claims were staked over a large gravity anomaly. The property is underlain by Archean rocks of the southern Wabigoon Subprovince that are unconformably overlain by Proterozoic sedimentary rocks of the Sibley Group and Nipigon diabase sills. No Archean rocks are exposed on the property. The east-striking, 20 mGal gravity anomaly has an irregular, ovoid shape, approximately 8 km by 15 km in size. It may represent a buried, iron-rich, intrusion in the underlying Archean basement rocks. ValGold carried out some cursory scintillometer surveys and prospecting on the property (G. Wesa, ValGold Resources Ltd., personal communications, September and December, 2005).

Linear Gold Corp. and **Falconbridge Limited** completed a eight-hole drilling program (totalling 2039 m) on their Kilometre 61 copper-molybdenum property east of Armstrong (Linear Gold Corp., news release, February 28, 2006). Highlights of the drilling included high-grade intersections of 1.78% Mo and 1.41% Mo over 3.0 m and 2.9 m, respectively, in 2 separate drill holes. Longer, lower grade intersections were also reported, including a 61.2 m section that returned 0.076% Mo and 0.19% Cu, and a 128.8 m section in another drill hole that returned 0.057% Mo and 0.12% Cu. Planned follow-up work in 2006 comprises line cutting, trenching, stripping, an IP survey, geochemical sampling and geological mapping.

Uranium

Rampart Ventures Ltd. completed an airborne electromagnetic survey over 6 of its 9 properties in the Sibley Basin, northeast of Thunder Bay (Rampart Ventures Ltd., news release, February 21, 2005). The VTEM survey, totalled 2520 line-kilometres. Rampart also completed a winter claim-staking program that added 501 claim units, bringing its total holdings in the area to 141 000 acres (Rampart Ventures Ltd., news release, March 16, 2005). Prospecting and geological reconnaissance was initially carried out around the Black Sturgeon uranium occurrence (news release, May 16, 2005). Drilling started in June 2005 (news release, June 06, 2005). A uranium occurrence consisting of narrow pitchblende stringers in a loose, angular block of Archean iron formation was located by prospecting 400 m south of the original Black Sturgeon uranium occurrence (news release, July 04, 2005). The discovery was made by systematic prospecting on a magnetic anomaly located by the VTEM airborne geophysical survey. Diamond drilling, line cutting, ground geophysical surveys, geological mapping and detailed prospecting were subsequently carried out in the area of the uranium occurrences (news release, August 10, 2005). Two samples of shattered bedrock from a trench on Zone B returned 4.32% and 1.56% U_3O_8 (news release, August 18, 2005). These samples consist of Archean iron formation cut by pitchblende-bearing veins. Two samples of Archean metasedimentary rock cut by a 2 to 3 cm wide hematite-magnetite vein carrying an unidentified uranium-bearing mineral from Zone C, assayed 1.03% and 1.70% U_3O_8. These samples were taken a few metres away from the iron formation that was being prospected. A grab sample of the Zone C iron formation cut by a radioactive seam returned 0.33% U_3O_8. A grab sample of iron formation cut by a narrow radioactive fracture, 100 m southwest and on strike of the original occurrence (Zone A) assayed 0.54% U_3O_8. These new assays reveal high-grade uranium occurrences over a strike length of at least 500 m, associated with 2 separate iron formations 400 m apart. Rampart completed 22 diamond-drill holes on the Split Rapids uranium occurrences (news release, October 31, 2005). Significant assay results included 2.99% U_3O_8 over 1.5 m, 1.99% U_3O_8 over 0.30 m, 0.56% U_3O_8 over 0.30 m, 0.54% over 0.30 m and 0.12% U_3O_8 over 3.52 m. An intersection in hole BS05-30 (2.99% U_3O_8 over 1.5 m), consisted of 4 pitchblende-bearing veins in an area of pervasive hematite alteration. The Split Rapids uranium zones are in an up-faulted part of the Mesoproterozoic Sibley Basin, where the sedimentary cover rocks have been removed by erosion and Archean basement is exposed. The company believes that these mineralized zones likely represent the lowermost roots of an unconformity-type uranium deposit that once existed some hundreds of metres above the present land surface. The

primary thrust of the next diamond-drill program will be to follow this uranium-bearing trend westwards under Sibley Group sedimentary rocks, where any unconformity-type uranium mineralization will be preserved in its entirety. Part of Rampart's holdings is subject to an agreement with **New Shoshoni Ventures Ltd.** (*see* "Property Examinations").

Cascadia International Resources Inc. acquired the Midway property in the Havoc Lake area, south of Armstrong (Cascadia International Resources Inc., news release, February 04, 2005). Sibley Group sandstone and conglomerate have been identified by mapping, and are now the focus of a uranium exploration program modelled after Athabasca-style deposits. An airborne electromagnetic (AEM) survey flown over the entire property traced a number of basement conductor targets and the western extent of conductors that occur on the adjoining Havoc property. Follow-up geophysical and geochemical surveys were planned. Cascadia also announced that it acquired an option on the adjacent Havoc property from **East West Resource Corporation** to explore for uranium-rare earth element and base metal targets. The Havoc property covers the eastern extension of Cascadia's Midway property (news release, February 04, 2005). The potential for uranium mineralization has not yet been explored where the AEM has traced graphite zones, which extend westward beneath the Sibley Group sedimentary rocks. Low-grade, uranium- and thorium-mineralized rocks are present on the Havoc property.

Gravity West Mining Corp. acquired a property in the Voltaire Lake area of the Nipigon Basin late in 2005 (Gravity West Mining Corp., news release, November 03, 2005). The property hosts Nipigon diabase and Sibley Group sedimentary rocks, which overlie Archean basement rocks of the Garden Lake greenstone belt.

Table 2. Assessment files received in the Thunder Bay North District in 2005.

Abbreviations

AEM	Airborne electromagnetic survey	IP	Induced polarization survey
AM	Airborne magnetic survey	Lc	Linecutting
ARA	Airborne radiometric survey	MMI	Mobile Metal Ion soil sampling survey
Beep	Beep Mat survey	OD	Overburden drilling
Bulk	Bulk sampling	ODH	Overburden drill hole(s)
DD	Diamond drilling	PEM	Pulse electromagnetic survey
DDH	Diamond drill hole(s)	PGM	Platinum group metals
DGP	Down-hole geophysics	Pr	Prospecting
GC	Geochemical survey	RES	Resistivity survey
GEM	Ground electromagnetic survey	Samp	Sampling (other than bulk)
GL	Geological Survey	Seismic	Seismic survey
GM	Ground magnetic survey	SP	Self-potential survey
GRA	Ground radiometric survey	Str	Stripping
Grav	Gravity survey	Tr	Trenching
HLEM	Horizontal loop electromagnetic survey	UG	Underground exploration/development
HM	Heavy mineral sampling	VLEM	Vertical loop electromagnetic survey
IM	Industrial mineral testing and marketing	VLFEM	Very low frequency electromagnetic survey

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Ashmore Township (Roche Longlac Gold Project)	Shields, S.	2003	Str	2.30040	42E10/NW-076
Connell Township (Pickle Lake Property)	King's Bay Gold Corporation	2004	DD, Samp	2.28941	52O08/NE-003
Crescent Lake (Kilometer 61 Property)	Noranda Inc.	2003	GC, IP, Pr, Samp	2.28119	52I08/NW-019
Dorothea and Sandra townships (Coté–Nortoba Property)	Coté, R. / Coté, D.	2003-04	Pr, Str, Samp	2.29240	52H09/NE-051
Dorothea Township and Poplar Point	Rutherford, E.	2002–2004	Str, Samp	2.28454	52H09/NE-050
East of Norton Lake (Norton Lake Project)	East West Resource Corporation / Canadian Golden Dragon Resources Ltd.	2004	AEM, AM	2.28797	42M14/NE-004, 42M14/NW-010
Elmhirst Township	Lafontaine, S. / Nichols, G.	2004	Pr, Str, Samp	2.30066	42E13/SE-133
English Bay and Havoc Lake (Havoc Claim Group)	East West Resource Corporation	2004	AEM, AM	2.28257	52H15/NW-006, 52H14/NE-014
Eva and Kitto townships (Eva Kitto Project)	East West Resource Corporation / Maple Minerals Corp.	2005	GL, Samp	2.30253	52H09/SE-036
Ficht and Attwood lakes (Linsey Bay Project)	East West Resource Corporation	2003–2004	DD, Samp	2.28222	52P02/NE-006a,b, 52P02/NW-007a,b
Frond Lake	Landore Resources Inc.	2004	DD, Samp	2.28844	52P09/SW-021
Frond Lake (Wottam Property)	Landore Resources Inc.	2002	GL, Samp	2.28617	52P09/SW-022a,b
Frond Lake (Wottam Property)	Landore Resources Inc.	2003	GL, Pr, Samp	2.30609	52P09/SW-023
Fry Lake (Don's Lake Property)	Brown, D.	2004–2005	DD, Samp	2.29522	52O03/NW-003a,b
Grand Bay (Grand Bay Property)	Canplats Resources Corporation / Canadian Golden Dragon Resources Ltd.	2004–2005	DD	2.29321	52H10/SW-008
Havoc Lake (Havoc Property)	East West Resource Corporation	2004	GC	2.28565	52H14/NE-015
Havoc Lake (Havoc Property)	East West Resource Corporation	2004–2005	GC, Samp	2.29447	52H14/NE-018

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Havoc Lake (Havoc Property)	East West Resource Corporation	2004–2005	IP, Lc	2.29244	52H14/NE-017
Havoc Lake (Havoc Property)	East West Resource Corporation	2005	DD, Samp	2.29650	52H14/NE-016
Junior and Falcon lakes	Pichette, A.	2004	Pr, Samp	2.28632	42L05/NW-032, 52I08/NE-19
Junior Lake (Junior Lake Property)	Brancote Canada Limited / Landore Resources Inc	2003	DD, Samp	2.27989	42L05/NW-031
Keezhik Lake (Cadman Gold Project)	Slam Exploration Ltd.	2004–2005	DD, Samp	2.30240	52P16/SW-014
Keezhik Lake (Keezhik Gold Project)	Brereton, W.	2003–2004	GL	2.30147	52P16/SW-015
Little Ochig Lake (Kasagiminnis Lake Property)	McVicar Minerals Ltd. / Millenium Minerals Limited	2004	AM	2.28299	52O08/SW-001
Maun Lake (Muriel Lake Property)	Carter, N. / Heard, R. / Nuinsco Resources Limited	2004	GM, Lc	2.30164	42L07/NW-027
McComber Township (Gwyn Lake Property)	Houghton, F.	2003–2004	GL, Manual, Mechanical, Samp	2.29320	42E12/NW-196
McComber Township (Kondrat Claim)	Skalesky, A.	2005	Pr, Samp	2.30230	42E12/NW-197
McQuestin and Houck townships (Coté–Alfred Lake Property)	Coté, R. / Coté, R. / Coté, M.	2003–2004	Pr, Str	2.28451	42E15/SW-031
Michikenopik Lake	Superior Diamonds Inc.	2003	GC, Samp	2.29818	53A08/NE-004a-c, 53A10/SE-005, 53A10/NE-004, 53A15/SE-004, 53A15/SW-002, 53A07/NE-004a-b, 53A07/NW-003, 53A07/SE-001, 43D05/NW-009
Mimiiska Lake (Mimiiska Lake Project)	Brereton, W.	2004	DD, Samp	2.28483	52P10/SE-022
Mimiiska Lake (Mimiiska Project)	Landore Resources Inc.	2003–2004	DD, Samp	2.30410	52P10/SE-024
Mimiiska Lake (Mimiiska Property)	Candor Ventures Corp.	2005	DD, Samp	2.30256	52P10/SE-023
Norton Lake (Norton Lake Property)	East West Resource Corporation / Canadian Golden Dragon Resources Ltd.	2003–2004	DD, Samp	2.28799	42M14/NW-011
Norway Lake (Lumby Lake Property)	Saunders, D.	2004	GEM, GM	2.28406	52G03/SW-051
Oboshkegan Township (Hendrickson Lake)	Lafontaine, S.	2004	Pr, Lc, Samp	2.29489	42L04/NE-118
Oboshkegan Township (Hull Lake Project)	N.W.T. Copper Mines Limited	2003	Str, Samp	2.29912	42L04/NE-120
Oboshkegan Township (Knucklethumb Project)	Roach, S.	2004	GEM, GM	2.28254	42L04/NE-115, 42L04/SE-042
Oboshkegan Township (Knucklethumb Project–Vent Prospect)	Kodiak Exploration Ltd. / Winges, J. / Winges, T. / Nelson, M. / Savage, J. / Lee, D.	2005	IP	2.30806	42L04/NE-124
Oboshkegan Township (Knucklethumb Property)	Cameco Corporation	2004	GC, GL, Manual/ Mechanical, Pr, Str, Lc, DD, Samp	2.29417	42L04/NE-117

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Oboshkegan Township (Spruce–Hull Lake Project)	Spruce Ridge Resources Ltd.	2004	Samp	2.30304	42L04/NE-123
Oboshkegan Township (Wobbegong Property)	Roach, S.	2003–2004	GL, Str, Samp	2.27368	42L04/NE-116
Oboshkegan Township (Wobbegong Property)	Roach, S.	2004	GC, DD, Samp	2.30367	42L04/NE-122, 42L04/SE-43
Oboshkegan Township and Metcalfe Lake (Knucklethumb Project)	Kodiak Exploration Ltd. / Lafontaine, S. / Nelson, M. / Savage, J. / Lee, D. / Wetherup, S. / Winges, J. / Winges, T.	2004–2005	GM, IP, Lc	2.29906	42L04/NE-119
Oboshkegan Township and Metcalfe Lake (Metcalfe North Option)	Kodiak Exploration Limited / Nelson, M. / Savage, J. / Lee, D. / Wetherup, S.	2004	GC, GL, Manual/ Mechanical, Str, Samp	2.30266	42L04/NE-121
O'Sullivan Lake (Aurum Property)	Maitland, C.	2003–2004	Pr, Samp	2.27707	42L06/NE-051, 42L07/NW-26
O'Sullivan Lake (Aurum Property)	Maitland, C.	2004	AEM/AM	2.29049	42L06/NE-052
Pither Township (Coté–Miner Lake Property)	Coté, R.	2003–2004	Pr, Str, Samp	2.29150	42E13/SW-100
Pillar Lake (Armstrong Property)	East West Resource Corporation	2004	Petrography, DD, Samp	2.29009	52I03/NE-003
Pillar Lake (Red Granite Claim Group)	East West Resource Corporation	2004	AEM, ARA, DD	2.27784	52I03/NE-002
Mimmiska Lake (Mimmiska Project)	Landore Resources Inc.	2003–2004	DD, Samp	2.30410	52P10/SE-024
Sheridan Lake	Lake Shore Gold Corp.	2002	AEM, AM, GL, Samp	2.28001	52A10/SE-007, 53A10/NE-006a,b 53A10/NW-004, 53A10/SW-005, 53G16/SW-001
Sim Lake (Sim Lake Project)	Superior Canadian Resources Inc.	2002–2004	GL, Samp	2.27306	52P01/SE-009, 52P01/NE-001
Sim Lake (Sim Lake Project)	Superior Canadian Resources Inc.	2004	AEM, AM	2.29094	52P01/SE-011
Sim Lake (Sim Lake Project)	Superior Canadian Resources Inc.	2005	GL, Samp	2.30415	52P01/SE-12a,b
Sim Lake (Sim Lake Property)	Thibault, D. / Smith, B.	2004	GM, Str	2.28184	52P01/SE-008
Sim Lake (Sim Lake Property)	Thibault, D. / Smith, B.	2005	GC, GM, Lc, Samp	2.30302	52P01/SE-013
Snowdrift Lake (Mimmiska Gold Project)	Brereton, W.	2003–2004	GL	2.30150	52P10/SW-011
Springer Lake (Rowlandson Lake Project and Lansdowne Project)	Aurora Platinum Corp.	2003	IP, DD, Samp	2.28939	43D05/NE-011a,b
Summers Township	Lafontaine, S. / Nichols, G.	2003–2004	Pr, Str	2.28048	52H09/SE-035, 42F12/SW-61
Summers Township (Coté–Archie Lake Project)	Alto Ventures Ltd.	2004–2005	Str, Samp	2.29105	42E12/NW-195
Veekay Lake (Reserve Creek Property)	Slam Exploration Ltd.	2003	Pr, DD, Samp	2.28424	42M12/SE-010
Vincent Township	Kravchik, S.	2003	Pr, Samp	2.27359	42E12/NE-187
Vincent Township	Kravchik, S.	2005	Pr, Samp	2.30012	42E12/NE-190

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Vincent Township (Maki Claim Group)	Maki, N.	2004	Pr, Samp	2.29036	42E12/NE-188a,b
Walters Township	Atkinson, R. / Pettit, C. / Clark, C.	2004	Manual/Mechanical, Samp	2.28788	42E12/NE-189
Wapitotem and Springer lakes (Rowlandson Property)	Lake Shore Gold Corp.	2003	IP, DD, Samp	2.28003	42D05/NW-009, 42D05/NE-011
Willet Lake (Dorsey Prospect)	Lance, S.	2003–2004	Pr, Tr, Samp	2.29041	42L05/SE-044
Zowina Lake	Superior Diamonds Inc.	2004	GC, Samp	2.30017	53A07/NE-005, 53A07/SE-002, 53A07/SW-001, 53A10/NE-005a,b

Table 3. Exploration activity in the Thunder Bay North Resident Geologist District in 2005 (keyed to Figures 2, 3 and 4).

Abbreviations

AEM	Airborne electromagnetic survey	IP	Induced polarization survey
AM	Airborne magnetic survey	Lc	Linecutting
ARA	Airborne radiometric survey	Met	Metallurgical testing
Beep	Beep Mat survey	OD	Overburden drilling
Bulk	Bulk sampling	ODH	Overburden drill hole(s)
DD	Diamond drilling	PEM	Pulse electromagnetic survey
DDH	Diamond drill hole(s)	PGM	Platinum group metals
DGP	Down-hole geophysics	Pr	Prospecting
GC	Geochemical survey	RES	Resistivity survey
GEM	Ground electromagnetic survey	Samp	Sampling (other than bulk)
GL	Geological Survey	Seismic	Seismic survey
GM	Ground magnetic survey	SP	Self-potential survey
GRA	Ground radiometric survey	Str	Stripping
Grav	Gravity survey	Tr	Trenching
HLEM	Horizontal loop electromagnetic survey	UG	Underground exploration/development
HM	Heavy mineral sampling	VLEM	Vertical loop electromagnetic survey
IM	Industrial mineral testing and marketing	VLFEM	Very low frequency electromagnetic survey

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity
1	Albert, O. (Pagwachuan Lake property)	Kassagimini Lake area (Au)	Pr
2	Alto Ventures Ltd. (Coté-Archie Lake property)	Summers Township (Au)	Pr, Str, Samp, GL
3	Alto Ventures Ltd. (Greenoaks property)	Pither Township (Au)	Pr, Samp
4	Alto Ventures Ltd. (Mud Lake property)	Elmhirst Township (Au)	Pr, Samp, GL, IP, Lc
5	Anderson, E.H. (Kasabonika Lake area)	Kasabonika Lake area and BMA 538882 (Au, Cu, Ni, Zn)	Pr, Samp, GC
6	Buck Lake Ventures Ltd. (Gwyn Lake property)	Vincent Township (Au)	GL, Pr, Str, Samp
7	Canadian Golden Dragon Resources Ltd.–Canplats Resources Corporation (Grand Bay property)	Grand Bay and Chief Bay areas (Cu, Ni, Pd, Pt)	DDH
8	Cascadia International Resources Inc. (Midway property)	Havoc Lake area (U)	AEM
9	Cascadia International Resources Inc.–East West Resource Corporation–Canadian Golden Dragon Resources Ltd. (Norton Lake property)	Norton Lake area (Pd, Pt, Cu, Ni)	PEM, DDH, HLEM, Resource estimation

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity
10	Coté, R. (Nortoba property)	Dorothea Township (Au)	Pr, Samp
11	Coté, R. and Coté, M. (Alfred Lake property)	McQuesten Township/Alfred Lake area (Au)	Pr, Samp
12	Coté, R. and Coté, M. (Bernadine Lake property)	Fullerton Lake area (Cu, Ni, PGE)	Pr, Samp, Str
13	Coté, R. and Coté, R. (Miner Lake property)	Pither Township (Au)	Pr, Samp, Str
14	De Beers Canada Exploration Inc. (Kasabonika area properties)	Northwestern Ontario (north half) (diamond)	GC, HM, DDH
15	East West Resource Corporation– Ethelburga Group (Armstrong property)	Pillar Lake area (U, Cu, Ni, Pt, Pd, Au)	AEM, DDH
16	East West Resource Corporation– Maple Minerals Corp. (Eva Kitto property)	Eva and Kitto townships (PGE, Cu, Ni)	GL, Samp
17	East West Resource Corporation– Maple Minerals Corp. (Adair property)	Metcalfe Lake area (Au)	Pr, Lc, GM, IP, Samp
18	Freewest Resources Canada Inc. – Teck Cominco Limited (Adel property)	Klotz Lake area (Au)	GL, Pr, Str, Samp
19	Fudge and Associates (Armstrong property)	Armstrong area (diabase)	GL, Pr, Samp
20	Goodman, H., Jr.	Irwin Township (Au, building stone)	Pr, Samp
21	Hardrock Extension Inc. (Hardrock property)	Ashmore Township (Au)	DDH
22	Kodiak Exploration Limited (Knucklethumb property)	Oboshkegan Township (Au)	GC, GL, GEM, GM, IP, Str, Tr, DDH, compilation, Samp
23	Kravchik, S. (Pichette property)	Vincent Township (Au)	Pr, Samp
24	Lafontaine, A. (Princess Lake property)	Summers Township (Au)	Str, Samp, Pr
25	Lafontaine, A. (Wilkinson Lake property)	Rickaby Township (Au)	Pr, Samp, Str
26	Lance, C. (Dorsey Lake property)	Gzowski Township (Au, Cu, Zn)	Pr, Samp
27	Landore Resources Canada Inc. (Miminiska Lake property)	Frond Lake area (Au)	DDH
28	Landore Resources Inc. (Junior Lake property)	Falcon Lake area (Au)	DDH
29	Landore Resources Inc. (Lamaune Lake property)	Falcon Lake area (Au)	DDH
30	Leo Alarie Construction Company (Hillsport Quarry)	Thomas Lake area (diabase ballast)	Quarry production
31	MetalCORP Limited (Keezhik Lake property)	Keezhik Lake area (Au)	Pr, Samp, GL
32	Nelson, M. and Cox, N. (Vega property)	Vincent Township (Au)	Compilation
33	Northern Shield Resources Inc. (Red Rover property)	Hanover Lake area (diamond)	HM
34	Nuinsco Resources Limited (Muriel Lake property)	Maun Lake area (Cu, Zn, Pb)	GEM, Pr, Samp, Lc, Tr, Str

No.	Company/Individual (Occurrence Name or Property)	Township/Area (Commodity)	Exploration Activity
35	Nustar Resources Inc. – Candor Ventures Corp. (Miminiska Lake property)	Miminiska Lake area (Au)	DDH
36	Pettit, C. (Watson Lake property)	Irwin Township (Au)	Pr, Samp
37	Pettit, C. (Wenzoski-Nora Lake property)	Walter Township (Au)	Pr, Samp
38	Placer Dome Inc. – Kinross Gold Corporation (Musselwhite properties)	Zeemel Lake area (Au)	DD
39	Rampart Ventures Ltd. (Black Sturgeon property)	Mikinak Lake area (U)	AEM, Pr, GL, Samp, Str, DDH, Lc, GM, GEM, GRA
40	Richview Resources Inc. – PGM Ventures Corporation (Thierry Mine property)	Ponsford Lake area (Pd, Pt, Cu, Ni)	DDH, Met
41	Roach, S. (Wilkinson Lake property)	Rickaby Township (Au)	Pr, Samp
42	Ross, D.M. (Pickle Crow property)	Connell Township (Au)	Mill construction
43	Roxmark Mines Limited (Nortoba property)	Dorothea Township (Au, Mo)	Pr, Str, Samp, DD, GL
44	Roxmark Mines Limited (Sand River and Leitch Mine properties, East Leitch property)	Eva and Summers townships (Au)	GL, Pr, Str, Tr, Bulk Samp, Samp
45	Rutherford, E. (Eva–Summers property)	Eva Township (Au)	Pr, Samp
46	Skalesky, D. and Lundstrom, L.	McComber Township (Au)	Pr, Samp
47	Spruce Ridge Resources Ltd. (Spruce Hull Lake property)	Oboshkegan Township (Au)	GL, Pr, Str, Tr, Samp, DDH
48	Spruce Ridge Resources Ltd. (Wenzoski Nora Lake property)	Walters Township (Au)	Str, Pr, Samp
49	Superior Canadian Resources Inc. (Aurum property)	O'Sullivan Lake and Maun Lake area (Au)	GL, Pr, Samp
50	Superior Canadian Resources Inc. (Sim Lake property)	Sim Lake area (Pt, Pd, Cu, Ni)	AEM, Pr, Samp
51	Superior Diamonds Inc. (AEM project)	Lansdowne-Muskrat Dam areas (diamond)	DDH
52	Theriault, O. (Burrows Lake property)	Isobel Lake area (Au, Cu, Zn)	Pr, Samp
53	Thibault, D., Smith, B., Wheeler, J. (Sim Lake property)	Sim Lake area (Cu, Ni, Pt, Pd)	GC, GM, Lc, Samp
54	Trigon Exploration Canada Ltd. (Viking project)	Durer Lake area (diamond)	HM, AM, Pr, GC
55	Trigon Exploration Canada Ltd. – Pele Mountain Resources Inc. (Alliance project)	Talbot Lake, Troutfly Lake, Attwood River areas, etc. (diamond)	GEM, GM, ODH, GC, HM, AM
56	ValGold Resources Ltd. (Roy–Can property)	Black Sturgeon Lake area (Fe, Cu, Au)	Pr, Samp, GRA

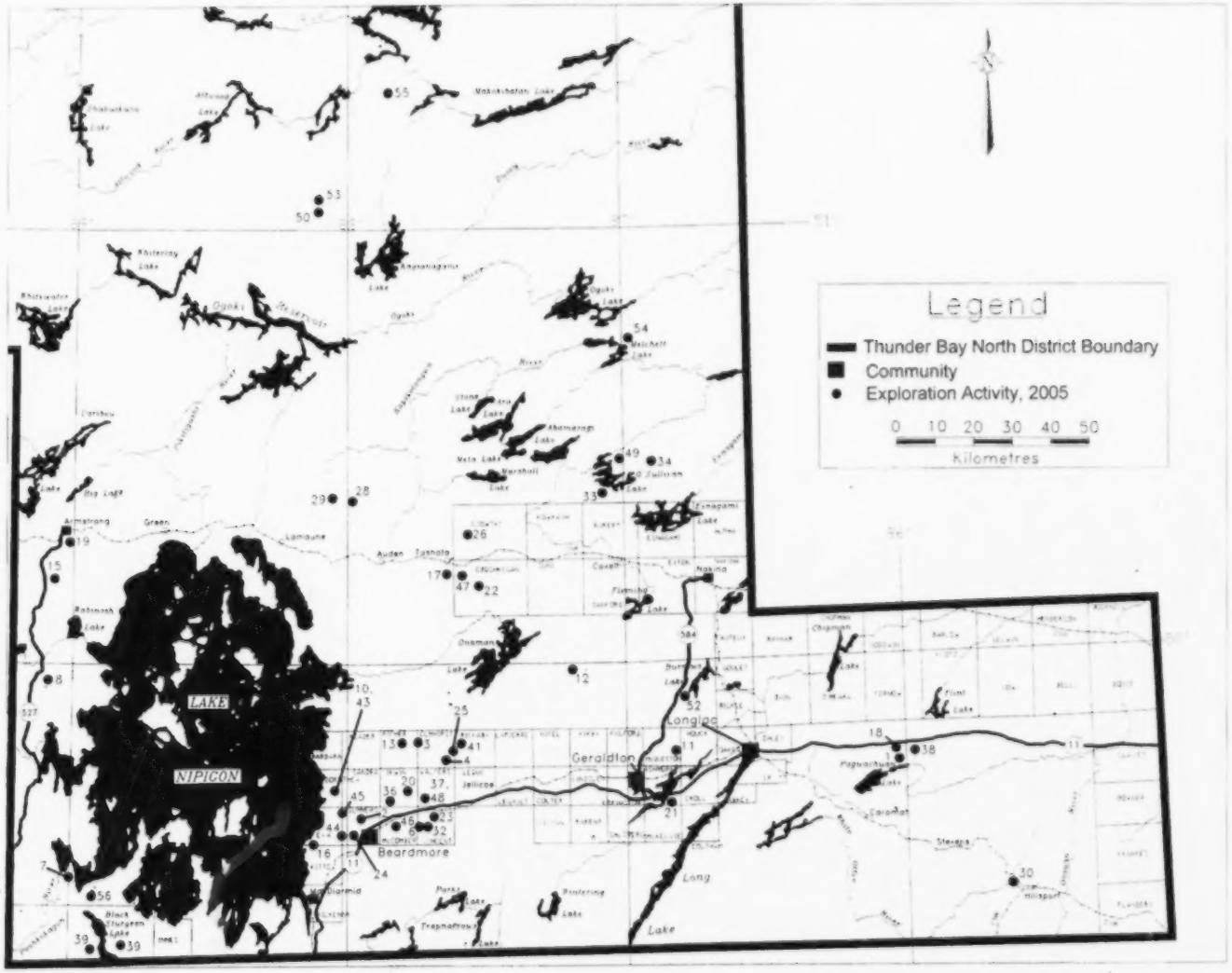

Figure 2. Thunder Bay North District (southeastern area) exploration activity, 2005.

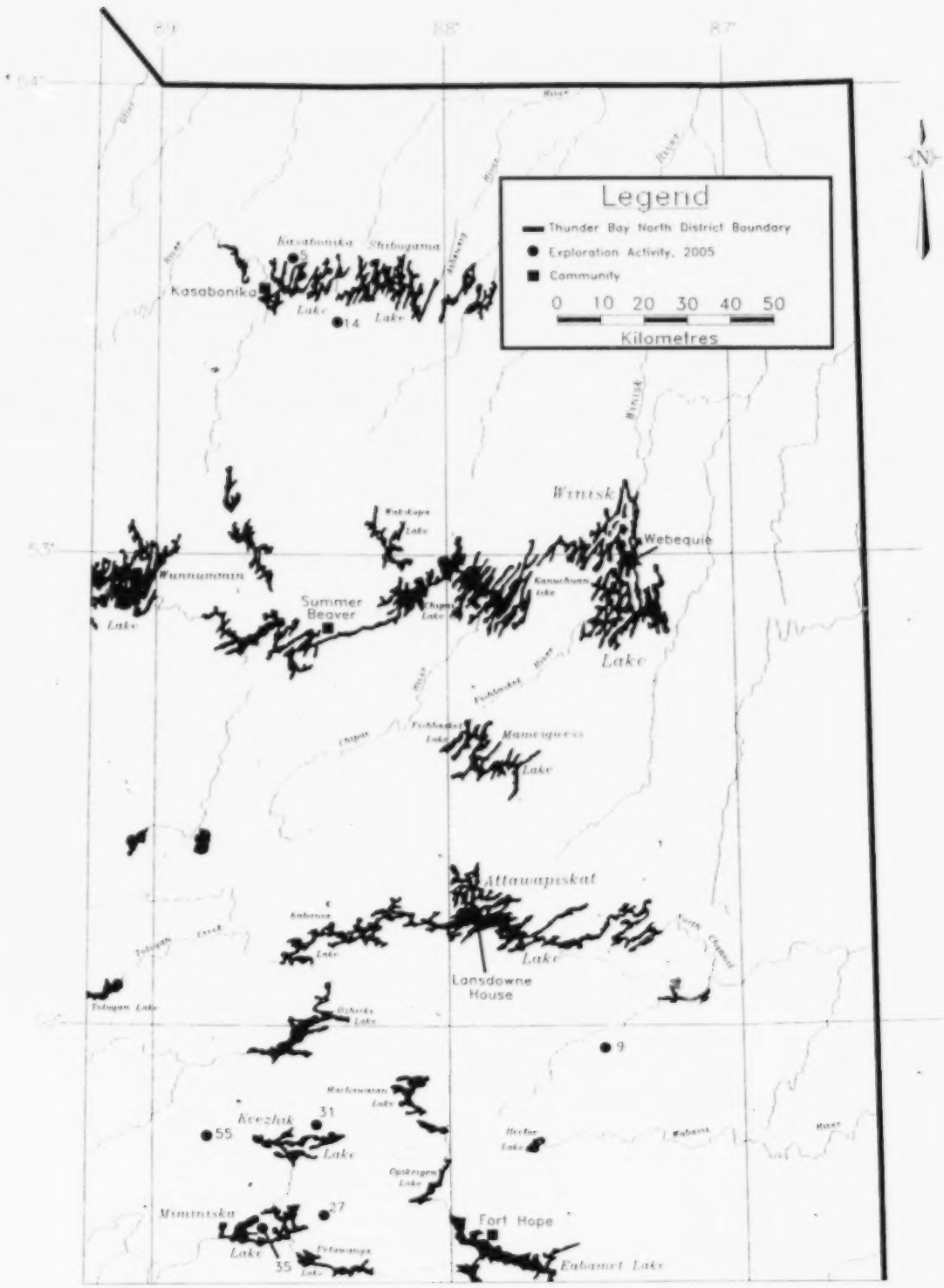

Figure 3. Thunder Bay North District (northeastern area) exploration activity, 2005.

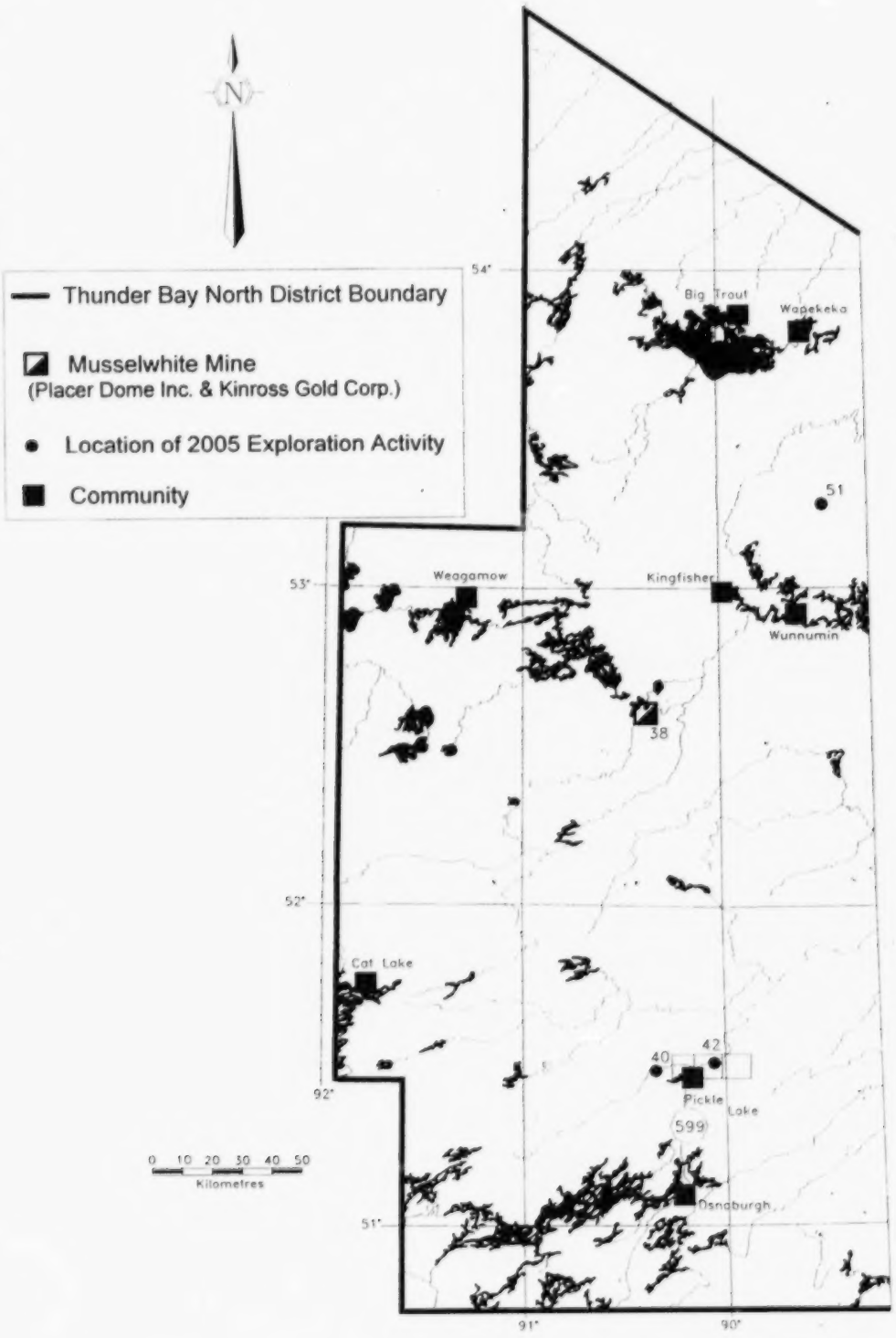

Figure 4. Thunder Bay North District (northwestern area) exploration activity, 2005.

RESIDENT GEOLOGIST STAFF AND ACTIVITIES

In 2005, the Thunder Bay North Resident Geologist Program (RGP) comprised Mark Smyk, *P.Geo.* (Regional Resident Geologist); Gerry White, *P.Geo.* (District Geologist); Angelique Magee (District Support Geologist) and Cyndee Komar (Administrative Assistant). Significant support was also provided by Desiree Wyant (GIS/Data Specialist), Peter Hinz, *P.Geo.* (Regional Land Use Geologist), Peter Moses (First Nations Minerals Information Officer), John Mason, *P.Geo.* (Northwest Regional Manager, RGP), and Mike Grant and Mark O'Brien (Mineral Development and Lands Branch), especially in dealing with Far North and First Nations issues.

In 2005, 47 property visits were conducted to 37 properties (Table 4). Several visits were also made in the Thunder Bay South District; they are not included in the aforementioned totals. RGP staff dealt with 916 visitors and 965 telephone, facsimile and e-mail inquiries in the Thunder Bay office, as well as in the Beardmore and Geraldton satellite offices. The Beardmore office, established in 1996 in conjunction with the community of Beardmore, was staffed one day per week from May to October. The Geraldton office, co-located in the Northern Development Officer's office, was staffed one day per month during the same time period. Thunder Bay North RGP staff attended or assisted in the production of materials for the following symposia in 2005: Cordilleran Round-Up, Vancouver (display); Prospectors and Developers Association of Canada Annual Meeting, Toronto (display); Northwestern Ontario Mines and Minerals Symposium, Thunder Bay (presentation and display); Institute on Lake Superior Geology, Nipigon (presentation and display); Manitoba Mining and Minerals Convention, Winnipeg (display) and the Ontario Exploration and Geoscience Symposium, Toronto (presentation and display).

M. Smyk served on the Science Committee for the Lake Nipigon Region Geoscience Initiative and as Treasurer of the Thunder Bay Branch, Canadian Institute of Mining and Metallurgy. He assumed the position of Co-Chair of the 51st Institute on Lake Superior Geology, May, 2005 in Nipigon. The 51st ILSG featured 5 field trips and attracted 127 delegates. M. Smyk was awarded the Samuel Goldich medal by the ILSG in recognition of contributions to Lake Superior geology and the Institute. He also served on the OGS Project Planning and Process Mapping committees. Collaborative research on Keweenawan rocks and fold-and-thrust tectonics in the Gunflint Formation was undertaken with P. Hollings and M.L. Hill (both at Lakehead University), respectively.

G. White continued in his position as Health and Safety Coordinator for the Thunder Bay Mines and Minerals office and co-ordinated tasks associated with the divestiture of the Thunder Bay Drill Core Library and Recommendations For Exploration. A. Magee started field work and courses related to her MSc thesis requirements at Lakehead University (part-time).

PROPERTY EXAMINATIONS

Table 4. Property visits conducted in the Thunder Bay North District in 2005 (keyed to Figures 2, 3 and 4).

Number	Property/Occurrence
1	Adel [PE]
2	Agutua Arm
3	Aurum
4	Black Sturgeon Uranium [PE]
5	Consolidated Louanna Mine
6	Coté–Archie Lake
7	Coté–Miner Lake [PE]
8	Dunning Pegmatite [FT]
9	East Leitch
10	Foster Pegmatite [FT]
11	Hull Lake
12	Junior Lake
13	Kilometre 52 Kinghorn
14	Klob Lake
15	Knucklethumb
16	Kondraat–Skalesky
17	Lafontaine (Wilkinson Lake)
18	Lamaune Lake
19	Leitch Mine [FT]
20	Macleod–Cockshutt–Hardrock mines [FT]
21	Missing Link / Missing Link Extension [FT]
22	Musselwhite Mine
23	Nora Lake
24	Northern Empire [FT]
25	Nortoba–Tyson
26	Paglamin Lake
27	Paseminon River
28	Pickle Crow Mine
29	Poplar Lodge [FT]
30	Princess Lake (Lafontaine) [PE]
31	Pyrotex
32	Sand River [FT]
33	Spruce Hull Lake
34	Suckle Lake (Highway 11)
35	Thierry Mine
36	Weagamow (North Caribou) area
37	Wilkinson Lake South (Lafontaine)

[R] described in "Recommendations for Exploration"

[PE] described in "Property Examinations"

[FT] visited during field trip conducted by Resident Geologist's staff in 2005

Adel Property

A joint venture was initiated in 2005 between Freewest Resources Canada Inc. and Teck Cominco Limited on the Adel gold property, approximately 50 km east of Longlac (Freewest Canada Resources Inc., news release, September 13, 2005). Teck Cominco Limited had carried out some preliminary prospecting, trenching and sampling in late 2004 southeast of Adel Lake (J. Paakki, Teck Cominco Limited, personal communication, January 2005). A 40 m wide altered and mineralized zone was uncovered near some old trenches. Grab samples returned up to 18 g/t Au from silicified, sulphidized (pyrite, arsenopyrite) banded iron formation and quartz porphyry (J. Paakki, Teck Cominco Limited, personal communication, January 2005). Freewest staked additional claims to the north and west, bringing the total land holdings to 481 claim units (news release, September 13, 2005) and initiated a program of prospecting, mapping, stripping and sampling.

The area was mapped by Amukun (1984). The Adel property straddles the boundary between the southern Wabigoon and northern Quetico subprovinces, which, in this area, is manifested by the east-trending Gravel River–Kamuck River fault (Carter 1975; Kresz and Zayachivsky 1993). Greenschist- to lower amphibolite-facies metasedimentary rocks (phyllites, schists) on the north side of the fault are juxtaposed with mid-to upper amphibolite-facies diatexites and migmatites, largely derived from metasedimentary protoliths, south of the fault. Gold mineralization was noted by Amukun (1984) along the east-trending Klob Lake–Hoiles Creek fault southeast of Adel Lake. In 1979, Onesime Albert prospected and trenched banded iron formation and sulphide-rich clastic metasedimentary rocks; sampling of this occurrence by Amukun (1984) returned 9 ppm Au. According to Amukun's (1984) regional mapping, the fault in this area forms the contact between metasedimentary rocks on the north and quartz-feldspar-phyric rocks to the south, which Amukun suggested were part of the Paglamin Lake granodiorite stock.

A property report prepared by Palmer (2005) for Freewest listed a number of gold occurrences on the Adel property: Gabbro Lake; Onesime Nos. 1, 2 and 3; North Contact zone; Otto shafts; Kenogamisis; and Gabbro Creek South. Staff of the Thunder Bay North Resident Geologist's Program (RGP) visited and sampled old trenches and areas stripped and exposed by Teck Cominco in 2004, referred to as the Onesime No. 1 showing (approximate UTM 575800E, 5512900N). The main mineralized zone is situated between garnet-, biotite-, staurolite- and amphibole-porphyroblastic metasedimentary rocks and quartz-feldspar-phyric metavolcanic rocks. The clastic metasedimentary rocks consist of sandstone and wacke, in which relict graded bedding suggests southward younging. These rocks become more argillaceous and sulphide-rich to the south (i.e., near the main mineralized zone). The quartz-feldspar-phyric rocks that bound the mineralized zone to the south are foliated, recrystallized and are typified by flattened quartz "eyes" in a sericitic schist. Despite deformation and annealing, fragments are locally discernable, suggesting that perhaps this is a felsic pyroclastic unit. This unit locally contains dark grey, foliation-parallel quartz stringers and other quartz veins that are oblique to the foliation. A similarly strained rock, exposed on the northwestern shore of Adel Lake (UTM 573583E, 5513002N), may be part of the same felsic unit.

The target of stripping and sampling has been a siliceous, non-magnetic, rusty, argillaceous shale containing pyrite and finely disseminated, euhedral arsenopyrite. Palmer (2005) noted that thin bands of pyrite and pyrrhotite in graphitic shale and argillite occur over a 1400 m strike length and correspond to an airborne electromagnetic anomaly. Weathering has produced white iron hydroxides. Translucent, colourless, bladed gypsum crystals, noted on fracture and joint surfaces, were identified by X-ray diffraction analysis (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). A sample of sulphide-mineralized rock near the felsic metavolcanic contact collected by Freewest in 2004 returned 4.5 g/t Au (D. Hoy, Freewest Resources Canada Inc., personal communication, 2005). Locally, arsenopyrite is coarse grained, subhedral and semi-massive. Despite the ubiquity of pyrite and arsenopyrite throughout the mineralized zone, gold values are erratically distributed. Four grab samples, containing from less than 1% to 3% arsenopyrite, were collected by RGP staff; all returned less than 0.01 ounce Au per ton (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). However, more than half of the 95 samples collected by Freewest within this 30 m wide altered and mineralized zone returned more than 100 ppb Au; 27 of these samples returned over 500 ppb Au (Palmer 2005). The highest gold values (1190 ppb Au over 2.5 m) occur at the contact with the felsic metavolcanic rocks to the south. A sample of the silicified metavolcanic unit returned 4771 ppb Au (Palmer 2005). Palmer (2005) also noted that elevated gold values (>1000 ppb Au) are associated with hanging walls of a series of low-angle to moderately south-dipping faults within the altered zone.

Freewest and Teck Cominco's recent success has reinforced the gold potential of this largely overlooked portion of the Beardmore–Geraldton belt. Amukun (1984) mapped and recommended the area for gold exploration, citing similarities to the past-producing Geraldton camp (cf. Smyk et al. 2005). The continuity of the banded iron formation from the Macleod–Cockshutt–Hardrock mines area to north of Pagwachuan Lake is revealed on the regional airborne magnetic survey (Ontario Geological Survey 1989). Most of the observed shear zones and other key structures were noted in the vicinity of known gold occurrences. These shear zones should be traced by prospecting and stripping and their extensions extrapolated on the basis of strained and altered rocks within and flanking these zones have been converted into biotite-, chlorite-, sericite- and/or carbonate-bearing schists. The Klob Lake–Hoiles Creek fault may be the eastern extension of the Burrows River fault and deformation zone, which has been traced through Fulford and McQuesten townships by Beakhouse (1989) and Croll, Houck and Oakes townships and Daley Township by Kresz and Zayachivsky (1991, 1993), respectively. Deformed and altered rocks and any quartz-carbonate veins in the vicinity of such structures should be systematically sampled. Arsenopyrite is locally a good pathfinder mineral for gold. It has been noted in association with gold mineralization in sulphidized banded iron formation, clastic sedimentary rocks, quartz porphyry and quartz-carbonate veins (Amukun 1984; Macdonald 1938).

The Paglamin Lake granodiorite stock and its environs is also recommended as a focus for exploration. Gold occurrences (e.g., Caramat Gold Mines; Adel Lake; west of Secon Lake) are associated with sheared and altered zones in felsic intrusive rocks and flanking clastic metasedimentary rocks with quartz-carbonate veining. Samples of granodiorite and quartz veins collected by RGP staff in 2005 from old trenches (Macdonald 1938) near the northern shore of Paglamin Lake returned up to 0.07 ounce Au per ton (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). At this location, intensely sheared granodiorite has been converted into a pyrite- and chalcopyrite-bearing, chlorite-sericite-iron carbonate phyllonite. This stock may be analogous to the Croll Lake stock, which is regarded by some researchers as the source of mineralizing fluids in the Geraldton camp. This relatively under-explored area warrants further investigation.

Coté–Miner Lake Property

The Coté–Miner Lake property is located east of Lake Nipigon in the northeastern portion of Pifher Township, 24 km north-northeast of Beardmore. Access to the six-claim group (a total of 27 units) is via Highway 801 (Paint Lake Road), which intersects Highway 11, 9 km west of Jellicoe. The property is located along the Paint Lake Road approximately 26 km north of Highway 11, just south of Miner Lake, which lies along the southern margin of the property. Backhoe trails access various parts of the claim group from this point. Beardmore prospectors and property owners Rick and Robert Coté have conducted a reconnaissance-style prospecting, stripping and sampling program across various parts of the property since 1998. During the 2005 field season, they uncovered an altered, gold- and copper-mineralized zone within felsic metavolcanic rocks, termed the Whale–Back occurrence.

The earliest exploration in the immediate vicinity of the Coté–Miner Lake property was initiated by the Reed–Coyne partnership in 1936 on a twenty-claim group just north of Miner Lake (Laird 1936). Laird (1936) indicated that stripping and trenching were carried out on a sulphide-mineralized zone although no assays were reported. Various exploration companies and individual prospectors conducted field programs on more than half a dozen properties in the northeastern corner of Pifher Township from 1953 to the early 1980s. Highlights included a four-hole, 141 m diamond-drill program by Greenspar Mines Limited on a property northwest of Miner Lake in 1965. Two showings, together known as the Greenspar occurrence, were initially uncovered by trenching and sampling. Copper-gold-mineralized zones occur within a shear zone and quartz vein, hosted by feldspar-hornblende porphyry. Drilling intersected narrow sections assaying up to 0.64 ounce Au per ton and 2.28% Cu (Tyson 1965). From 1982 to 1983, Anyox Metals Limited conducted an electromagnetic survey over the Greenspar property and completed 4 diamond-drill holes, totalling 590 m, to test 3 conductors. Fracture-filling or vein-hosted chalcopyrite and pyrrhotite were discovered within intermediate to felsic metavolcanic rocks. Results up to 0.25% Cu and 0.25 ounce Ag per ton over narrow widths were noted (Mason and White 1986). Two properties in the area also saw limited gold production during the 1980s. In 1982, Thyssen Mining Construction (Canada) Limited extracted 1224 tons of ore from the Greenoakes Mine property, immediately east of the Coté–Miner Lake property, for owner B. Miron. The average grade was 0.182 ounce Au per ton. From 1981 to 1985, Northern Concentrators Limited, representing a joint-venture group, mined a total of 1655 tons of gold ore from two zones (Veins No. 1 and No. 2) on the Crooked Green Creek Mine property, located in central Pifher Township. Grades ranged from 0.19 to 0.43 ounce Au per ton (Mason et al. 1998). Both mine properties, including the Coté–Miner Lake property, lie within the same felsic package of rocks.

The Coté–Miner Lake property is situated in the southwestern part of the Onaman–Tashota greenstone belt. The northeastern portion of Pifher Township is dominated by intermediate to felsic lapilli tuff, tuff-breccia and massive to flow-banded rhyolite (Kresz and Zayachivsky 1989). These metavolcanic rocks are intruded by units of hornblende-, feldspar- and quartz-feldspar porphyry (occurring both as sill-like bodies and irregular dikes), diorite and quartz diorite dikes. The granodioritic North Wind Lake and Elmhirst Lake stocks bound the property 4 km to the west and 3 km to the east, respectively, and are the most likely source of the abundant porphyritic dikes and sills in this area. It is important to recognize the significance of these intrusive bodies, which often produce a strain aureole in the surrounding metavolcanic rocks. Iron carbonate and sulphide enrichment is typical of these high-strain zones (Stott and Straub 1999). Related hydrothermal systems may have produced the intense alteration of the main zone in the north-central portion of the property.

Felsic metavolcanic rocks have been uncovered in several locations on the property by stripping. They are transected by northeast- or northwest-trending shear zones containing gold-base metal-mineralized quartz veins and/or stockwork quartz veining. Some have been exposed for over 50 m and average 1 to 3 m wide. The sheared wall rock is chlorite- and sericite-rich, and locally contains 1 to 3% pyrite and chalcopyrite. The main showing, known as the Whale–Back occurrence, was exposed in a stripping and sampling program during the 2005 field season by the property owners. Three rock types occur within a 20 m by 50 m wide exposure. Lesser amounts (30%) of flow-banded rhyolite and felsic autoclastic breccia (with fragments up to 30 cm in size) occupy the northern end of the outcrop. The largest portion (70%) of the recently uncovered bedrock is composed of a pervasively chlorite-sericite-altered, blue quartz-eye porphyry. A portion of this blue quartz-eye porphyry was uncovered during a 1998 stripping program immediately adjacent to the newly uncovered zone. Samples contain up to 10% (averaging 1 to 2%) fine seams, patches and disseminated grains of chalcopyrite, pyrrhotite and minor pyrite. Much of the outcrop is gossanous as a result of carbonate alteration and sulphide oxidation. Limited grab and channel grab samples collected from the Whale–Back occurrence by staff of the Thunder Bay North Resident Geologist's Program returned values up to 3.65 g/t Au (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). Sampling by property owners from this new zone returned assays up to 25.23 g/t Au. Samples were also collected from a trench (TR99-4E) located approximately 200 m northeast of the Whale–Back occurrence. Siliceous felsic metavolcanic flows (some banded) and biotite-rich, feldspar porphyry returned values up to 7.72 g/t Au. Mineralization within these units is manifested as patches, disseminated grains and fracture fillings up to 10% of chalcopyrite, pyrrhotite and pyrite, with prominent malachite-azurite staining in some areas.

The Coté–Miner Lake property has the potential for significant gold and volcanogenic massive sulphide (VMS) base metal mineralization. A VMS model is supported by the abundance of hydrothermally altered, felsic metavolcanic host rocks and copper-rich sulphide mineralization. The persistence of pervasive chlorite-sericite alteration to the limits of the stripped area in the main zone suggests the likely existence of a much larger alteration–mineralization system.

Lafontaine–Princess Lake Occurrence

The Lafontaine–Princess Lake occurrence is located in the southwestern portion of Summers Township within the Princess Chain of Lakes area, approximately 3.5 km west of Beardmore (Figure 5). Access is via the waste disposal road on the northern edge of Beardmore, west for 5.5 km along an old bush road to a point approximately 100 m north of the occurrence. The main showing, situated in the northeastern portion of claim TB 1221496, was exposed during a 2005 backhoe stripping and sampling program conducted by prospector and property owner, A. Lafontaine of Beardmore.

The southwestern part of Summers Township was the focus of extensive exploration activity in the 1930s. From 1935 to 1939, numerous, vein-related gold occurrences were discovered and worked within this portion of the southern volcanic subbelt (SVB; Hart, ter Meer and Jolette 2002). A considerable amount of both surface and underground exploration work was conducted on the Anglo–Beardmore and Buffalo–Beardmore Gold Mine occurrences. Buffalo–Beardmore Gold Mines Ltd. sunk a 24.4 m (80-foot) shaft and completed over 3048 m (10 000 feet) of diamond drilling. Gold mineralization in this area is characterized by pyrite, pyrrhotite, chalcopyrite and up to 40% arsenopyrite in quartz and quartz-carbonate veins. These veins crosscut altered mafic metavolcanic flows and banded chert-magnetite iron formation (Hart, ter Meer and Jolette 2002). The C.J. Morgan occurrence is located approximately 400 m northeast of the Lafontaine–Princess Lake property and consists of several bands of iron formation. Initial work in 1938 led to the discovery of visible gold from a large gossan

containing 5 quartz-carbonate veins that returned assays of 1.2, 3.1 and 8.4 ounces Au per ton (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). Mapping and sampling of the Morgan showing by Bent (1989) for Glen Auden Resources Inc. confirmed the presence of a significant arsenopyrite-pyrrhotite-mineralized zone in sulphide- and/or oxide-facies iron formation within sheared mafic metavolcanic rocks. Narrow, discontinuous, quartz veinlets and stringers occur within this hydrothermal alteration zone. Grab samples collected on the Morgan property returned as much as 5900 ppb Au (Bent 1989). Also active during this period of time was the Northern Empire Mine, which produced approximately 149 000 ounces of gold from 1934 to 1941 (Speed and Craig 1992). The mine is located 5.5 km northeast of the Lafontaine–Princess Lake ground, along strike and within the same package of rocks (SVB). Very little activity occurred in the area until 1981 when Gold Fields Resources Canada Limited conducted an extensive ground magnetometer and electromagnetic survey over a large property covering many of the aforementioned occurrences. Following an airborne magnetometer and electromagnetic survey completed by Legion Resources Ltd. in 1986, the property was subsequently optioned to joint-venture partners Golden Dragon Resources Ltd. and Glen Auden Resources Inc. in 1989. This became part of a larger land package extending westward across 2 townships and into Lake Nipigon. Geological mapping, stripping, trenching, and ground electromagnetic and induced polarization geophysical surveys were completed. In 2005, current property owner, A. Lafontaine, conducted a prospecting, stripping and sampling program on a group of claims, now referred to as the Princess Lake property (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

Figure 5. Location of the Lafontaine–Princess Lake occurrence (*modified from* Hart, ter Meer and Jolette 2002). Abbreviations: BF – Blackwater fault; EF – Empire fault; PLF – Princess Lake fault; SSB – southern sedimentary subbelt; SVB – southern volcanic subbelt.

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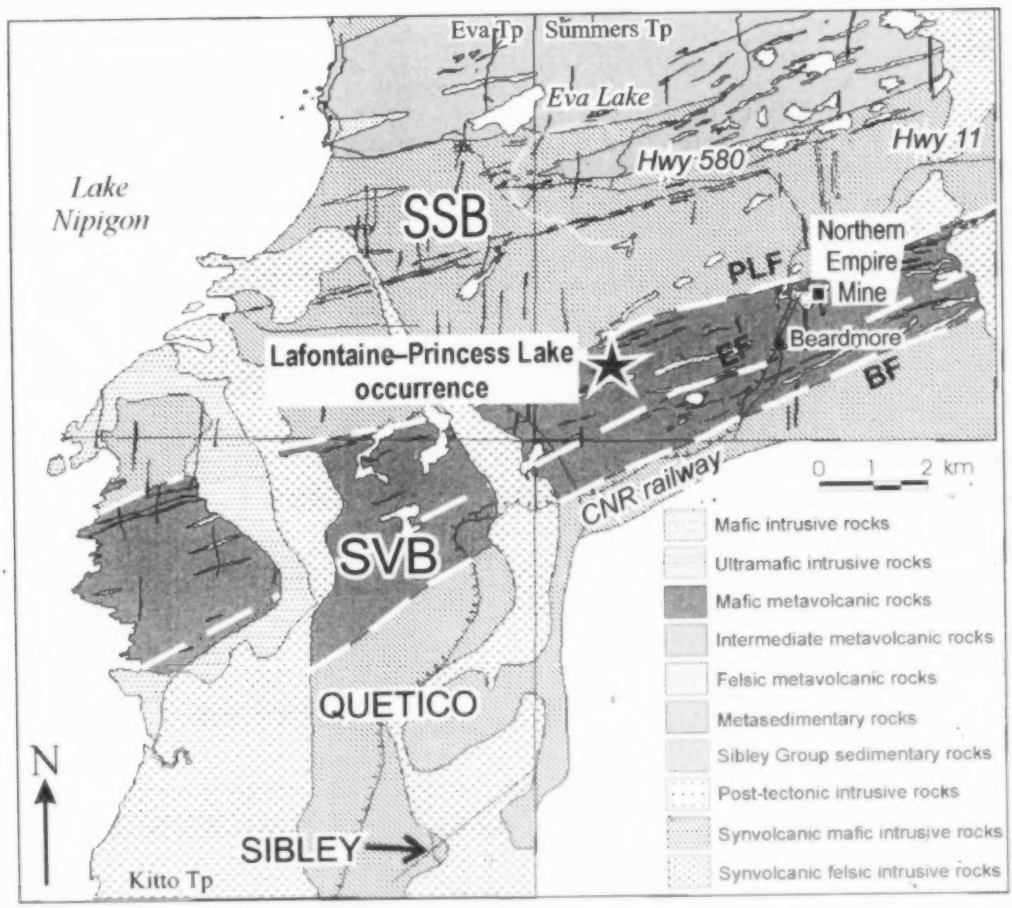

Figure 5. Location of the Lafontaine–Princess Lake occurrence (*modified from* Hart, ter Meer and Jolette 2002). Abbreviations: BF – Blackwater fault; EF – Empire fault; PLF – Princess Lake fault; SSB – southern sedimentary subbelt; SVB – southern volcanic subbelt.

The Lafontaine–Princess Lake occurrence lies along and within the northwestern portion of the SVB (Hart, ter Meer and Jolette 2002), which is part of the main east-trending Beardmore–Geraldton greenstone belt. This belt forms the southern margin of the Wabigoon Subprovince, which is bounded to the south by metasedimentary rocks of the Quetico Subprovince. Hart, ter Meer and Jolette (2002) indicated that previous interpretations (Benedict and Titcomb 1947; Shanks 1993) placed the Empire fault (which transects the Northern Empire Mine) adjacent to the northern edge of the SVB in western Eva Township and extended it through the Princess Chain of Lakes in eastern Eva and Summers townships. A reinterpretation of the area by Hart, ter Meer and Jolette (2002) resulted in the separation of the original Empire fault into 2 distinct faults: the Empire fault to the south and the Princess Lake fault to the north. The Princess Lake fault is parallel to the trend of the Princess Chain of Lakes, striking 060° through the southern portion of the southern sedimentary subbelt (SSB). This fault is evident in the area around the Princess Chain of Lakes where an increase in deformation is manifested as more intensely developed shear fabrics within the metavolcanic and metasedimentary rocks (Hart, ter Meer and Jolette 2002).

The main gold-mineralized zone on the Lafontaine–Princess Lake property is exposed in a 12 m wide by 190 m long stripped area along a prominent southwest-trending, north-facing ridge. The exposed bedrock consists of moderately to intensely sheared and gossanous, pillowed metavolcanic rocks that strike approximately 068° and dip steeply north. Highly stretched pillows were noted along a nearby, north-facing ridge, outside of the main stripped area. Scattered throughout the metavolcanic host rocks are bands of sulphidized, oxide-facies, cherty, banded iron formation, locally crosscut by quartz-carbonate veins. Sulphide mineralization associated with the iron formation consists of lenses or seams of coarse-grained, euhedral arsenopyrite and massive, fine-grained pyrite up to 1 cm thick. The mineralized zone averages 1% finely disseminated arsenopyrite, pyrite and minor chalcopyrite. Grab samples collected by staff of the Thunder Bay North Resident Geologist's Office during a 2005 property visit returned up to 5.27 g/t Au from sulphide-rich, iron formation. A sample collected from sheared mafic metavolcanic rock returned 303 ppb Au. Samples collected by A. Lafontaine from the main stripped area returned up to 0.25 ounce Au per ton (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

The portion of the Princess Lake fault extending across the northern half of the Lafontaine property should be a focus for further exploration. The increase in deformation associated with this structure, which is parallel with the boundary between the SVB and SSB, makes this area highly prospective for gold. The greenstone belt rocks adjacent to the fault, in particular those near known gold occurrences, should be prospected. Special attention should be paid to any gossans or sheared banded iron formations.

Black Sturgeon Uranium Property

In 2004, Rampart Ventures Ltd. entered into a joint-venture agreement with New Shoshoni Ventures Ltd. to acquire a 70% interest in their Nipigon–Sibley Basin projects (Rampart Ventures Ltd., news release, October 19, 2004), some of which covered known highly anomalous to high-grade uranium occurrences (cf. Scott 1987). The potential of the Sibley Basin (as a possible analogue to the Athabasca Basin) also led to the staking of additional claims in the region. Rampart Ventures Ltd.'s land package is in excess of 53 000 ha (news release, October 31, 2005). Access to the property is gained by travelling 27 km north on the Black Sturgeon Road from its junction with Highway 11–17. Follow Camp 42 Road for 14 km, and then the Church Road for 36 km. Continue along the Church Road to a logging road known as Plateau Road. Head southwesterly on a logging road known as Canyon Road. Then follow the old Split Rapids Dam Road to Rampart's Zone A.

The western extension of the Beardmore–Geraldton greenstone belt (Wabigoon Subprovince) lies south and west of Lake Nipigon and is bounded by the metasedimentary Quetico Subprovince to the south. These Archean basement rocks are unconformably overlain by Mesoproterozoic Sibley Group sedimentary rocks; all aforementioned rocks are intruded by Mesoproterozoic Nipigon diabase sills. There have been different amounts of uplift and erosion along regional, north- and northwest-trending faults (e.g., Black Sturgeon fault) (cf. Coates 1972). Banded iron formation (BIF)-hosted uranium mineralization may represent a stockwork system that is situated beneath larger uranium deposits that may occur at the unconformity between Archean basement and overlying Mesoproterozoic Sibley Group where the latter has not been uplifted and eroded (news release, October 31, 2005).

Prospecting and stripping on the Black Sturgeon property by Rampart Ventures Ltd. has resulted in the discovery of 8 uranium occurrences, all either in, or adjacent to, BIF. They occur over a strike length of 750 m, and over a lesser strike length in another, parallel BIF (news release, October 31, 2005). Split Rapids Zone A was tested to follow up on previous results with holes BS05-09 to BS05-17. Zone B was tested by holes BS05-18 to 21; Zone C was tested by holes BS05-22 to 27, and Zone D was tested by holes BS05-28 to 30 (news release, October 31, 2005).

The Split Rapids Zone A trench (UTM 369700E, 5466800N) is where high-grade uranium was discovered by the Ontario Geological Survey in 1981; grab samples returned up to 3.9% U_3O_8 (Scott 1982, 1987). Assay results of up to 12% U_3O_8 (grab samples) were reported by Uranerz Exploration and Mining Ltd. in 1982 (Scott 1987) during a program of geological mapping, ground magnetometer and scintillometer surveys, geochemistry, and stream sediment sampling.

Uranium-bearing fractures contain uraninite (a.k.a. pitchblende; UO_2), magnetite, hematite and quartz ± epidote and are usually found in association with metamorphosed BIF, which consists of recrystallized magnetite, quartz, amphibole, large garnet porphyroblasts and traces of pyrite. Secondary uranium minerals include uranopilite ($(UO_2)_6SO_4(OH)_{10}{\cdot}12H_2O$) in BIF and brannerite ($(U,Ca,Y,Ce)(Ti,Fe)_2O_6$) in pegmatites adjacent to the showings (Scott 1987). In the vicinity of the uranium-bearing BIF, metagreywacke, pegmatite, metavolcanic amphibolite, diorite, and biotite-quartz-feldspar gneiss are exposed. The rocks have been metamorphosed to upper greenschist or lower amphibolite facies and are foliated (060/70 southeast). The rocks have been recrystallized and primary layering has been rotated into the foliation. Analytical results of samples collected by staff of the Thunder Bay North Resident Geologist Program are pending.

Rampart Ventures Ltd. completed diamond-drill holes BS05-09 to BS05-17 on the Split Rapids Zone A to further test the mineralized zone. Results included 0.563% U_3O_8 over 0.3 m, 1.99% U_3O_8 over 0.3 m, and 0.12% U_3O_8 over 3.52 m (news release, October 31, 2005).

Trenched Zone B, 400 m southwest of Zone A, returned 5.24% U_3O_8 (news release, July 04, 2005). Zone B consists of a highly weathered, friable breccia containing uraniferous, magnetite-hematite nodules and fragments in a biotite-clay matrix. Disseminated uraninite is found throughout the matrix. Breccia fragments consist of felsic metavolcanic rocks, BIF and other metasedimentary rocks. This lithologic unit is interpreted to be a regolith that was formed prior to the deposition of the Sibley Group sedimentary rocks. Intense weathering and regolith development are necessary for the release of uranium into the environment and for the subsequent formation of unconformity-related uranium deposits (Scott 1987). Banded iron formation is believed to be a favourable host for uranium mineralization due to an oxidation–reduction reaction in which iron is oxidized and uranium is reduced and subsequently deposited (Scott 1987).

Zone C, 400 m southwest of Zone A, returned 0.213% U_3O_8 over 0.3 m and 0.293% U_3O_8 over 0.3 m from diamond-drill holes BS05-22 and BS05-25, respectively (news release, October 31, 2005). Zone D, 250 m southwest of Zone A, returned 0.543% U_3O_8 over 0.3 m and 2.994% U_3O_8 over 1.5 m from diamond-drill holes BS05-28 and BS05-30, respectively (news release, October 31, 2005).

Although no gold showings have yet been identified during the current exploration program, Rampart continues to explore for gold on the property as well as uranium. Diamond drilling to the west of the Split Rapids area, through the Nipigon sills and Sibley Group sedimentary rocks to Archean basement, is planned to begin early in 2006. The goal of the drilling is to target Archean–Proterozoic unconformity-type uranium deposits using VTEM anomalies generated by an airborne survey flown by Rampart in early 2005 that followed up on ground electromagnetic surveys completed by Teck Cominco Ltd. in 2003 (news releases, June 06, 2005; October 31, 2005).

RECOMMENDATIONS FOR EXPLORATION

Volcanogenic Massive Sulphide (VMS) Deposits

SACHIGO SUBPROVINCE

The Sachigo Subprovince has been the subject of a recent tectonostratigraphic and geochronologic study because of the discoveries of volcanogenic massive sulphide (VMS) deposits at McFaulds Lake and ongoing diamond exploration in the area. Recommendations regarding the area's VMS potential were made by Smyk et al. (2004). Geochronologic data obtained by Rayner and Stott (2005) and Stott and Rayner (2004) have elucidated the regional geology and strengthened the link between this and other subprovinces containing belts that host VMS deposits. Rayner and Stott (2005, p.10-20) stated:

> Since virtually all significant Cu-Zn volcanogenic massive sulphide (VMS) deposits in the Superior Province are Neoarchean in age, the presence of Oxford–Stull terrane bears some importance for exploration. A Neoarchean age of 2737±7 Ma has been determined for a felsic volcanic host of recently discovered Cu-Zn volcanic-hosted massive sulphide deposits in the McFaulds Lake area, inside the edge of the James Bay Lowlands. This argues for the potential of a chain of VMS occurrences to be explored along a Neoarchean tectonic assemblage extending from Kasabonika to the McFaulds Lake area, comparable to the VMS-rich assemblage along the discontinuous Shebandowan–Terrace Bay–Manitouwadge greenstone belt of the Wawa Subprovince, as described by Stott and Rayner (2004).

EASTERN WABIGOON SUBPROVINCE

Felsic metavolcanic terrains in the eastern Wabigoon Subprovince, extending from the Onaman–Tashota belt west to the Crescent–Caribou lakes belt, should be re-examined for volcanogenic massive sulphide (VMS) mineralization. Recently published compilation maps depicting the geology and tectonostratigraphic assemblages in the eastern Wabigoon (Stott et al. 2002) should be used to target prospective areas on the basis of lithology, alteration and mineralization. Recent logging and related road construction east of Armstrong has provided remarkable access and new exposure in an area last mapped by Pye (1968) and Berger (1992). Garnetiferous, gossanous, hydrothermally altered, intermediate to felsic pyroclastic rocks were noted by Smyk et al. (2004) on the main (Jackfish) haulage road, midway between North Lamaune and Juneau lakes. Follow-up reconnaissance by Resident Geologist Program (RGP) staff, in conjunction with ongoing work by Barnett (2005), in 2005, has led to the recognition of similarly altered, felsic to intermediate pyroclastic rocks over a large area along the southern margin of the Summit Lake pluton. These likely represent the westerly extension of the pyroclastic units mapped south of Junior Lake by Berger (1992); they were also mapped along the northern margin of the pluton (Berger 1992).

Whole-rock geochemical analysis of a sample of garnetiferous tuff-breccia (UTM 429866E, 5587196N) collected in 2005 (05MLL-01B) is shown along with that of the felsic pyroclastic unit on the Jackfish road (03 MNL-03), which, as reported by Smyk et al. (2004), suggested possible depletion in sodium and calcium, as well as enrichment of iron and magnesium, typical of VMS-related alteration.

Sample Number	Units	Al_2O_3	CaO	Fe_2O_3	K_2O	LOI	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	TOTAL
05 MLL-01B	wt %	14.68	5.19	10.39	1.03	1.32	1.84	0.43	1.72	0.12	62.77	0.49	100.00
03 MNL-03	wt %	11.12	1.12	10.45	1.02	3.60	4.67	0.15	0.33	0.10	68.38	0.48	101.41

A sample of a weakly magnetic, gossanous zone in the garnetiferous tuff-breccia with disseminated, fine-grained pyrite at the same location as 05 MLL-01B returned 204 ppm Cu and 132 ppm Zn (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). A recrystallized, rusty-weathering, quartz-magnetite banded iron formation (BIF) boulder with disseminated, fine-grained pyrite was sampled by P.J. Barnett (Sedimentary Geoscience Section, OGS) south of Swole Lake in 2005 (UTM 432024E, 5584286N). It returned 459 ppm Cu, >3000 ppm Zn, nil Ag and nil Au (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). Similar boulders were found along the road south of Swole Lake and in trenches excavated by Landore Resources Canada Inc. near their BAM gold occurrence (UTM 433588E, 5581965N). It is probable that the up-ice, bedrock source of the BIF boulders lies near the southern margin of the Summit Lake pluton between Swole and Junior lakes. A previously unmapped quartz-phyric, felsic unit was also noted nearby (UTM 432024E, 5584286N).

Berger (1992) suggested 2 broad subdivisions of supracrustal rocks in the Toronto Lake area: the first group occupies the southern margin of the greenstone belt, north of the Robinson pluton, and extends west of Ketchikan Lake; the second envelops the Summit Lake pluton and extends east towards Marshall Lake. These subdivisions roughly correspond to the Willet assemblage (ca. 2740 Ma) and Marshall assemblages (ca. 2739 Ma) of Stott et al. (2002), respectively. The Marshall Lake assemblage, which wraps around the synvolcanic Summit Lake pluton, has a demonstrated VMS potential. The Marshall Lake deposit, held by N.W.T. Copper Mines Limited, has a drill-indicated reserve of 2 211 000 tons averaging 1.22% Cu, 4.20% Zn, 2.45 ounces Ag per ton and 0.012 ounce Au per ton (*Canadian and American Mines Handbook*, 2005–2006, p.289).

It is recommended that prospecting and reconnaissance mapping be carried out along the margins of the Summit Lake pluton, southeast of Tape Lake, in order to identify and connect felsic pyroclastic units, banded iron formations and other favourably altered units that extend west from the Marshall Lake (Straub et al. 2000) and Toronto Lake area (Berger 1992).

Diamonds

STRUCTURAL CONTROL OF PRECAMBRIAN BASEMENT

A geological re-interpretation of the Precambrian basement adjacent to and underlying the Phanerozoic cover in the James Bay and Hudson Bay lowlands was initiated by Stott (2003a, 2003b). It was postulated that the structures, which controlled the emplacement of Precambrian dike swarms in the area, may also have exerted control over the subsequent emplacement of Jurassic kimberlite pipes (Figure 6). Stott (2003b) stated:

> "...a geological interpretation reveals two important empirical relationships. There is a spatial correlation between the early Jurassic kimberlite pipes (including the Victor deposit of De Beers Canada Exploration Inc.) and one of a set of northwest-striking Matachewan (ca. 2446 Ma) diabase dykes near Attawapiskat River and just south of the

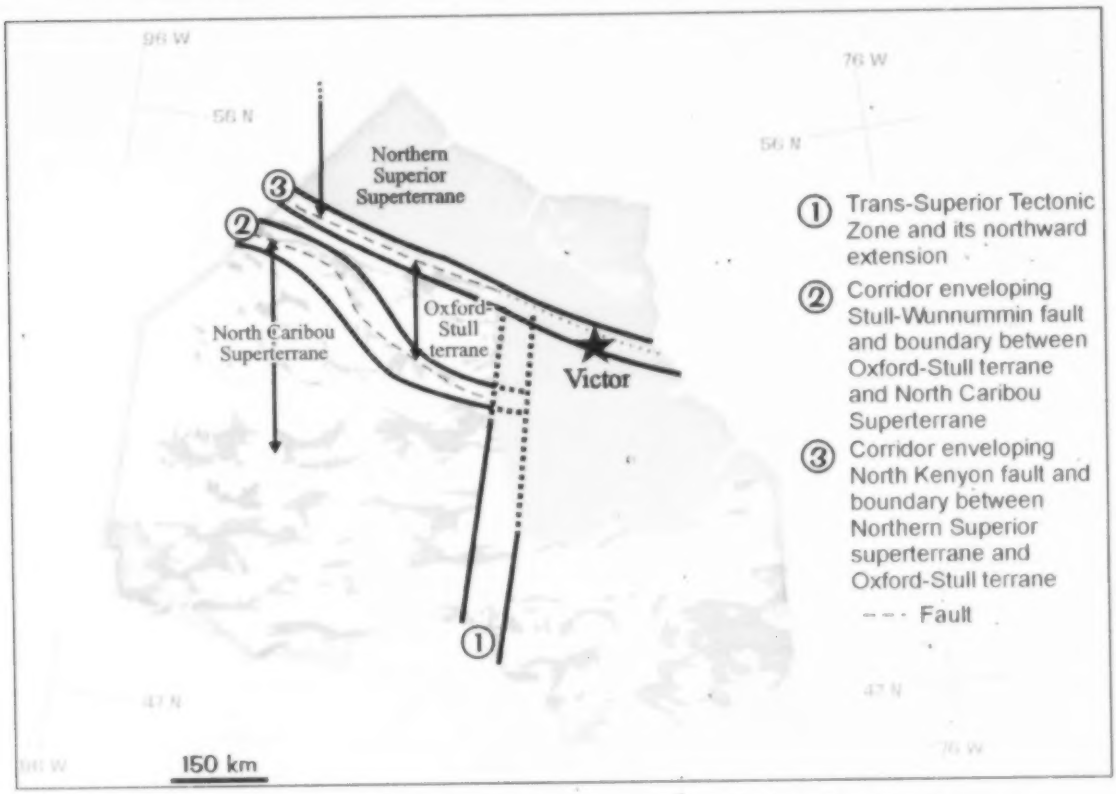

Figure 6. Potential diamond-bearing structures (*from* Stott 2005) in northern Ontario.

Winisk fault. There is a spatial correlation between the middle Proterozoic (ca. 1100 Ma) kimberlite pipes of the Kyle suite and a set of north-striking diabase dykes (possibly related to the ca. 2101–2121 Ma Marathon swarm). The occurrence of both sets of kimberlite pipes close to the Winisk fault suggests that dyke-associated fracture swarms served as second-order, extensional "splays" near this major fault and provided preferred emplacement pathways for pipe intrusions during episodes of reactivation of the fault circa 1100 Ma and 180 Ma. Similar settings of diabase dykes intersecting major faults are present elsewhere in the James Bay and Hudson Bay lowlands. Exploration for diamond bearing kimberlites should consider the potential role of diabase dykes and associated parallel, deep crustal fractures as structural pathways."

As noted by Stott (2005), Mesoproterozoic kimberlite pipes appear to follow close to north-trending Marathon (ca. 2110 Ma) diabase dikes under the western edge of the James Bay Lowland and on strike with the north-trending Trans-Superior tectonic zone farther south. The Trans-Superior tectonic zone near Lake Superior and its northern extension into the James Bay Lowland was recommended for diamond prospecting by Smyk et al. (2005). Jurassic kimberlite pipes in the James Bay Lowland tend to cluster close to the northwest-trending (ca. 2450 Ma) Matachewan diabase dikes and possibly near northeast-trending faults or dikes (Stott 2005). There is also potential for the discovery of kimberlite pipes in the vicinity of major Archean faults that lie along the boundary between Archean terranes. Two deep-seated, crustal-scale faults are of interest:

1. The Stull–Wunnummin fault, which passes through the Wunnummin greenstone belt just north of the Big Beaver House and Schryburt lakes carbonatite complexes. This fault lies between the Oxford–Stull terrane and North Caribou superterrane (Rayner and Stott 2005).
2. The North Kenyon fault, which appears to form the boundary between the Northern Superior superterrane and the Oxford–Stull terrane. This fault merges eastward into the Winisk fault and lies close to the Lawashi River carbonatite near James Bay. Farther west, near the Manitoba–Ontario border, the North Kenyon fault lies close to a set of north-striking diabase dikes, which lie northeast from kimberlite indicator mineral concentrations discovered by Stone (2005). Stott (2005) recommended that reconnaissance exploration be conducted along these fault zones for Proterozoic and Phanerozoic kimberlite pipes.

Gold

GOLD AND BASE METAL POTENTIAL OF THE ONAMAN–TASHOTA GREENSTONE BELT

The Onaman–Tashota greenstone belt is located east of Lake Nipigon, within the eastern Wabigoon Subprovince. The area is underlain predominantly by intermediate to felsic metavolcanic rocks and hosts 7 past-producing gold mines (Figure 7):

Mine	Years of Production	Gold Produced (oz)	Avg. Grade (oz gold/ ton)	Silver Produced (oz)	Copper Produced (lb)
Consolidated Louanna	1983–1984	15 400	0.22	—	
Quebec Sturgeon River	1936–1942	73 438	0.51	15 922	
Dikdik (Orphan)	1934–1935	2460	0.70	1558	
Brenbar (Brengold)	1941, 1949	134	2.91	—	
Maloney Sturgeon	1937	73	73.00	16	
Crooked Green Creek	1980–1984	471	0.32	—	
Tashota–Nipigon	1935–1938	12 356	0.24	14 527	360 306
TOTAL		104 332		32 023	

Data *from* Speed and Craig (1992)

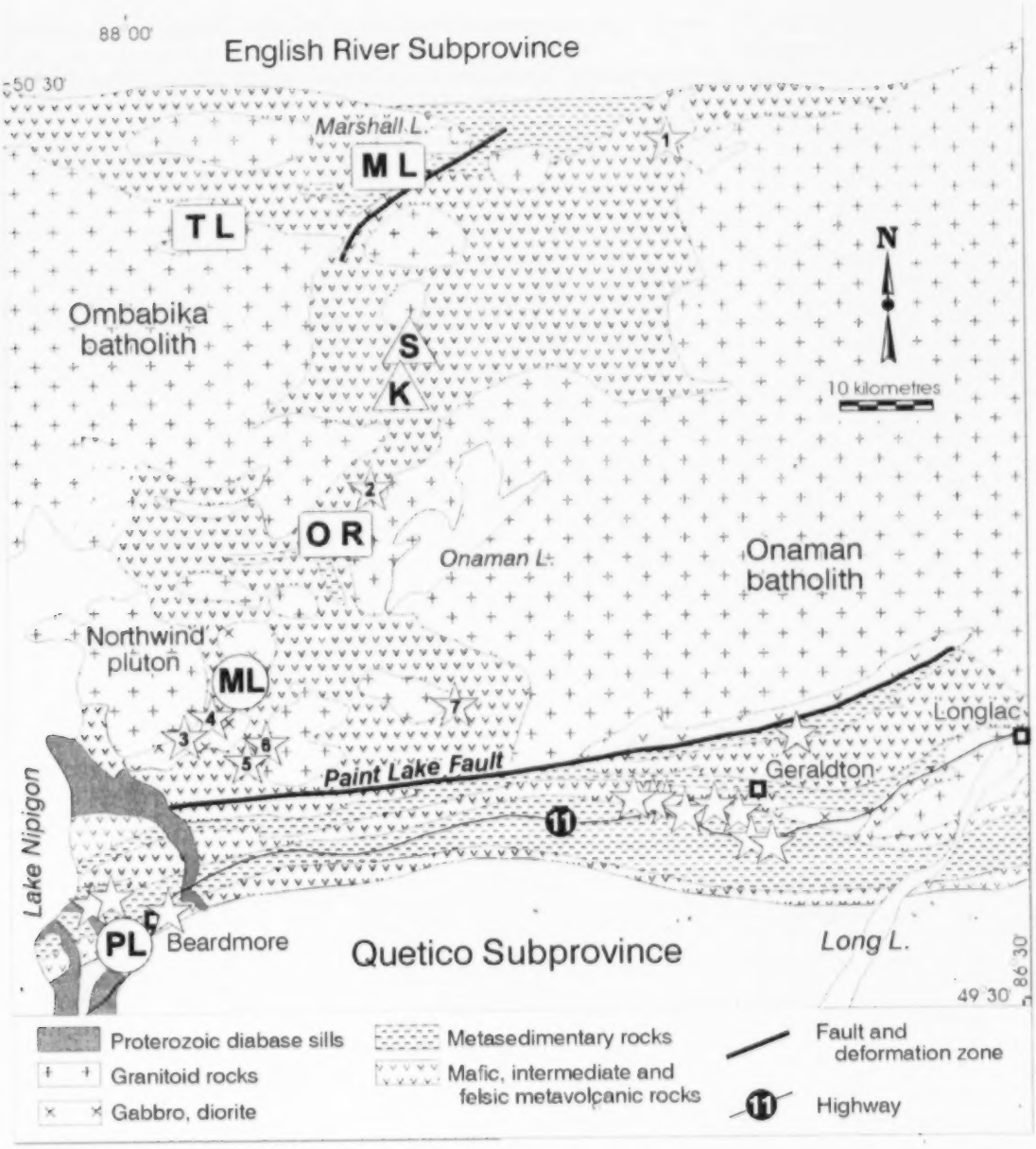

Figure 7. General geology of the Onaman–Tashota greenstone belt and portions of the eastern Wabigoon Subprovince (*modified from* Stott and Straub 1999). The Beardmore–Geraldton greenstone belt lies south of the Paint Lake fault.

Symbols

Stars represent past-producing gold mines: 1 – Consolidated Louanna; 2 – Tashota–Nipigon; 3 – Maloney-Sturgeon; 4 – Crooked Green Creek; 5 – Brenbar (Brengold); 6 – Quebec Sturgeon River; and 7 – Dikdik (Orphan).

Boxes represent areas of base metal potential: ML – Marshall Lake; TL – Toronto Lake; and OR – Onaman River.

Triangles represent active properties, specifically S – Spruce Hull Lake (Spruce Ridge Resources Ltd.) and K – Knucklethumb (Kodiak Exploration Limited).

Circled properties are described in "Property Examinations", specifically Miner Lake (ML) Au-Cu and Princess Lake (PL) Au.

Recent gold exploration activity has been dominated by Kodiak Exploration Limited with work on its Knucklethumb property in Oboshkegan Township. Between 2003 and the present, the company has completed a $2.5 million multi-phase exploration program, identified at least 3 main west-trending shear zones hosting numerous gold occurrences, and uncovered a significant gold-copper-bearing alteration zone in the central portion of the property (*Kodiak Exploration Limited, news release*, September 21, 2005). The Ryne and Hourglass occurrences on the property were the focus of research by Grondin and Williams-Jones (2004). Isotope studies indicate that these 2 occurrences may be part of a large shear-hosted mesothermal gold deposit exhibiting an unusual copper signature. Spruce Ridge Resources Ltd. has also been active on adjoining ground to the north, known as the Spruce–Hull Lake property. The company has uncovered several new gold-bearing zones associated with quartz-eye porphyry and sheared mafic metavolcanic rocks (Resident Geologist's Files, Thunder Bay North District, Thunder Bay; Spruce Ridge Resources Ltd., news release, August 3, 2005).

Base metal mineralization is recognized in 3 main areas within the Onaman–Tashota belt: Toronto Lake, Marshall Lake and the Onaman River area, immediately west of Onaman Lake. The Marshall Lake property, held by N.W.T Copper Mines Limited, has seen an extensive amount of work completed over the past 50 years by numerous exploration companies. This work has outlined a volcanogenic massive sulphide (VMS) deposit, which has a drill-indicated reserve of 2 211 000 tons averaging 1.22% Cu, 4.20% Zn, 2.45 ounces Ag per ton, and 0.012 ounce Au per ton (*Canadian and American Mines Handbook*, 2005–2006, p.289). Recent work, including detailed structural mapping by Stott and Straub (1999), indicated that the deposit consists of several east-plunging, stratabound massive sulphide lenses or pods hosted within intermediate to felsic pyroclastic breccias and felsic tuff. Stott and Straub (1999) also noted that previous grid lines and ground geophysical surveys were oriented parallel to the north-trending stratigraphy. Future exploration work may help to clarify the deposit geometry and locate additional ore reserves.

The Onaman River area hosts numerous, high-grade, zinc-lead-silver-copper-gold occurrences and deposits within a felsic metavolcanic sequence. The most notable of these is the Headway–Coulee deposit (approx. 300 000 tons in 2 zones grading up to 4.4% Zn, 0.76% Pb, 5.83 ounces Ag per ton, and 0.07 ounce Au per ton) and the Lynx Canada deposits (approx. 180 000 tons in 2 zones grading up to 4.19% Cu, 3.23 ounces Ag per ton, and 0.03 ounce Au per ton) (Bowdidge 1992). Four base metal occurrences lie within the southern portion of the Onaman River area: 1) The D-9 conductor; 2) the Abitibi prospect; 3) the Cane prospect; and 4) the South Zinc occurrence. Selected samples collected from these occurrences by company and government personnel returned values ranging up to 2.9% Cu, 9.8% Pb, 5.8% Zn, and 0.42 ounce Au per ton (Resident Geologist's files, Thunder Bay North District, Thunder Bay).

The Onaman–Tashota Belt is underexplored and highly prospective for both gold and VMS base metal mineralization. In many cases, there appears to be an overlap or juxtaposition of lode gold and VMS mineralization. Deformation has not only remobilized primary (syngenetic) base metal sulphides (±gold) into younger structures, but has also introduced epigenetic gold and related hydrothermal alteration in the same or similar structures. Exploration would benefit by applying not only VMS and/or lode gold models, but also by recognizing that there is likely a continuum of "mixed" mineralization styles in between these 2 deposit types.

GOLD IN THE CENTRAL AND EASTERN UCHI SUBPROVINCE

The Archean Uchi Subprovince extends for over 625 km in northwestern Ontario. It hosts the active Red Lake gold camp and the past-producing mines at Pickle Lake that have collectively produced more than 25 million ounces of gold. Greenstone belts in the Red Lake, Pickle Lake and Fort Hope areas are situated in the western, central and eastern portions of the Uchi Subprovince, respectively. The latter two are the subject of the following recommendations for exploration.

The Fort Hope area and its gold occurrences have been favourably compared in structural and tectonic setting, not only to the other gold camps in the Uchi Subprovince, but also to the nearby Beardmore–Geraldton greenstone belt in the eastern Wabigoon Subprovince. Gold mineralization is associated with deformation zones and regional transcurrent faults at or near subprovince boundaries. These structures have produced "belts" of intercalated metavolcanic and clastic metasedimentary rocks. Local gold occurrences have been documented in Ontario Geological Survey (OGS) Open File Report 5926, *Mineral Occurrences and Prospects in the Fort Hope-Winisk River Area* (Mason and White 1995). Gold occurrences are hosted by quartz veins; altered and sheared porphyries and associated supracrustal rocks; or sulphidized banded iron formation. Several exploration companies, including Landore Resources Canada Inc., MetalCORP Limited and Canstar Resources Inc., are actively investigating the gold potential of the belt.

The Pickle Lake area has hosted several past-producing mines (Pickle Crow, Central Patricia, Dona Lake, Golden Patricia), which, collectively, produced over three million ounces of gold. In the Pickle Lake and neighbouring Meen–Dempster and Lang Lake greenstone belts, quartz vein- and banded iron formation-hosted gold deposits are located in separate strain domains, related in part to the intrusion of local felsic plutonic rocks. Much highly prospective ground remains unstaked.

GOLD TARGETS IN THE BEARDMORE–GERALDTON GREENSTONE BELT

The Beardmore–Geraldton greenstone belt, along the southern margin of the eastern Wabigoon Subprovince, has produced over four million ounces of gold. Despite this, very little exploration has been carried out in the belt since the late 1980s. It has recently been called the "Forgotten Beardmore–Geraldton Gold Camp" for this reason (Koziol 2005). Gold exploration is recommended on the central and eastern extensions of the Paint Lake–Burrows River fault, a transcurrent fault associated with gold deposits in the belt. Further detailed prospecting for gold is recommended between Geraldton and the Kinghorn Road, on the Paint Lake–Burrows River fault, and along secondary and tertiary faults and/or lineaments. A parallel, regional structure to the south, the Watson Lake fault, also has a number of gold occurrences (e.g., Archie Lake, Angle Lake, Nora Lake) associated with it. This structure may be, in part, responsible for the formation of the Leitch Mine and neighbouring deposits, serving as an important hydrothermal fluid conduit. The Archie Lake and Nora Lake properties are currently being explored by Alto Ventures Ltd. and Spruce Ridge Resources Ltd., respectively.

Recent work by Teck Cominco Limited, Freewest Resources Canada Inc. and Novawest Resources Inc. east of Longlac has reinforced the gold potential of this largely overlooked portion of the Beardmore–Geraldton greenstone belt. Previous mappers have recommended the area for gold exploration, citing similarities to the Geraldton camp. The continuity of the banded iron formation from the Macleod–Cockshutt–Hardrock mines area to north of Pagwachuan Lake is revealed on the regional airborne magnetic survey (Ontario Geological Survey 1989).

Although regional-scale faults are not commonly mineralized, subordinate splay structures typically host gold occurrences. It is recommended that these structures or shear zones be traced by prospecting and stripping. Strained and altered rocks within and flanking these zones have been converted into biotite-, chlorite-, sericite- and/or carbonate-bearing schists. Deformed and altered rocks and any quartz-carbonate veins in the vicinity of such structures should be systematically sampled. Arsenopyrite is locally a good pathfinder mineral for gold. It has been noted in association with gold mineralization in sulphidized banded iron formation, clastic sedimentary rocks, quartz porphyry and quartz-carbonate veins.

OGS ACTIVITIES AND RESEARCH BY OTHERS

1. P.J. Barnett (Sedimentary Geoscience Section, OGS) began a program of regional Quaternary mapping and till sampling for heavy mineral indicator and geochemical analysis, over a part of the Caribou Lake greenstone belt located north of Lake Nipigon (Barnett 2005). The study area lies within NTS maps 52 I/07, 52 I/08, 52 I/09 and 52 I/10. The study will provide guidance in the interpretation of results from overburden sampling programs in this area and regional information on the mineral potential of this part of the Caribou Lake greenstone belt.

2. T.R. Hart (Precambrian Geoscience Section, OGS) carried out a single-year compilation of the various data sets collected during the Lake Nipigon Region Geoscience Initiative (LNRGI), complemented with a number of adjacent data sets, including the Ontario Treasure Hunt Garden–Obonga airborne geophysical survey and Preliminary Map P.3532 for the Lac des Iles area. The goal of the project is to provide a comprehensive synthesis of the geological data centred on Lake Nipigon to provide an improved regional geological and tectonic framework for the Lake Nipigon area. Products will include hard-copy geological maps, a seamless digital geological compilation, and a synoptic style Open File Report focussing on the Proterozoic rocks and mineral potential of the western Lake Nipigon area (Hart 2005).

3. S.M. Hamilton (Sedimentary Geoscience Section, OGS), K.H. Hattori and I.D. Clark (University of Ottawa) completed some field work on forest rings near the southern margin of the Paleozoic James Bay Lowland east of Geraldton (Hamilton, Hattori and Clark 2005). Forest rings occur over geological centres of negative-charge and, in at least one case, the source was determined to be methane. Forest rings related to methane may be of interest as possible sources of natural gas. The remaining rings may be of interest to mineral explorationists since other

possible sources of negative charge include metallic sulphides, kimberlites, oil and coal. During 2005, work was initiated to determine the source of methane on a larger number of rings. Ten of the eleven 2004 sites and 2 additional rings were selected for follow-up isotope work. At each site, drive-point piezometers were installed and diffusion-samplers placed in each. The samplers were later collected and analyzed for carbon isotope content.

4. The Far North Geological Mapping Initiative (FNGMI), a science-based, geological mapping and inventory initiative, was undertaken by the OGS in 2005 in order to better understand the geological history of the Far North and its mineral resources (Parker et al. 2005). The geographic area to be covered by the Initiative is situated north of 51°N latitude and includes the Ministry of Natural Resource's Northern Boreal Initiative (NBI) area. Areas where geoscience studies and mapping will be conducted will be better defined following client input and consultation with aboriginal communities. The following activities were underway as part of the Far North Initiative: preparation of Requests for Proposals for the purchase of proprietary geophysical data and the acquisition of new geophysical data; recruitment of staff for geoscience data compilation functions; geoscience gap analysis meetings and engagement with client groups and stakeholders; planning, design and preparation of mapping projects; equipment acquisition; and information exchange and consultation with aboriginal communities.

5. Results from some of the research projects associated with the Lake Nipigon Region Geoscience Initiative (LNRGI) were published in 2005. They include

Open File Report (OFR) 6164 *Precambrian Geology of the West-Central Map Area, Nipigon Embayment, Northwestern Ontario, Lake Nipigon Region Geoscience Initiative*;
by C.A. MacDonald, E. Tremblay and R.M. Easton

Miscellaneous Release—Data (MRD) 146 *Geological and Lithogeochemical Data from the Western Nipigon Embayment, 2003 and 2004, Lake Nipigon Region Geoscience Initiative (LNRGI)*;
by C.A. MacDonald and E. Tremblay

Preliminary Map P.3559 *Precambrian Geology of the Kabitotikwia Lake Area, West-Central Nipigon Embayment, Northwestern Ontario*; by C.A. MacDonald, E. Tremblay and M. ter Meer, scale 1:50 000

Preliminary Map P.3560 *Precambrian Geology of the Cheeseman–Black Sturgeon Lakes Area, West-Central Nipigon Embayment, Northwestern Ontario*; by C.A. MacDonald, E. Tremblay and M. ter Meer, scale 1:50 000

Preliminary Map P.3561 *Precambrian Geology of the Max–Muskrat Lakes Area, West-Central Nipigon Embayment, Northwestern Ontario*;
by C.A. MacDonald, E. Tremblay, M. ter Meer, T.R. Hart and R.M. Easton, scale 1:50 000

MRD 156 *Petrographic Data from the West-Central Nipigon Embayment, Lake Nipigon Region Geoscience Initiative*; by E.S. Schandl (GeoConsult)

OFR 6167 *PGE Surficial Geochemistry Case Studies Project: Lake Nipigon Region Geoscience Initiative*;
by P.J. Barnett and R.D. Dyer (Sedimentary Geoscience Section, OGS)

MRD 154 *Surficial Geochemistry Case Studies Project Digital Data Set, Lake Nipigon Region, Northwestern Ontario*; by R.D. Dyer and P.J. Barnett

MRD 189 *Logistics and Interpretative Report, Physical Property Borehole Logging: Lake Nipigon Region Geoscience Initiative*; by DGI Geoscience Inc.

OFR 6174 *Stratigraphy and Sedimentology of the Mesoproterozoic Sibley Group and Related Igneous Intrusions, Northwestern Ontario: Lake Nipigon Region Geoscience Initiative*;
by B. Rogala, P.W. Fralick and R. Metsaranta (Lakehead University)

OFR 6175 *Geochemistry and Radiogenic Isotope Characteristics of the Sills of the Nipigon Embayment: Lake Nipigon Region Geoscience Initiative*;
by A.J. Richardson, P. Hollings (Lakehead University) and J.M. Franklin (Franklin Geosciences)

OFR 6176 *Sulphide Saturation Mechanisms in Gabbroic Intrusions in the Nipigon Embayment: Lake Nipigon Region Geoscience Initiative;* by S.A. Kissin, G.J. Heggie and A.K. Somarin (Lakehead University)

MRD 190 *Stratigraphic, Geochemical and Isotopic Data from Lakehead University Researchers: Lake Nipigon Region Geoscience Initiative*; by P.W. Fralick, P. Hollings, S.A. Kissin, G.J. Heggie, R. Metsaranta, A.J. Richardson, B. Rogala and A.K. Somarin

6. Henry Halls (University of Toronto) and Greg Stott (Precambrian Geoscience Section, OGS) continued various studies of mafic dykes (Halls, Stott and Davis 2005) in order to improve the limited understanding of the paleomagnetic and geochronologic signature of the numerous mafic dyke swarms in northwestern Ontario. The association between younger kimberlitic intrusions and older dyke swarms was also considered, as was identifying potential PGE-bearing target intrusions. An effort was also made to target dykes that may have served as feeders to Keweenawan mafic sills and sheets in the Nipigon Embayment.

7. A project initiated in 2004 to better discriminate Archean domains and broad tectonic subdivisions within the Sachigo Subprovince (Stott and Rayner 2004) was continued in 2005 by Rayner and Stott (2005). This project focused on U/Pb age determinations and Nd-isotopic characteristics of plutonic rocks in the eastern Sachigo, including basement underlying the Hudson Bay and James Bay lowlands, in order to extend fairly well-constrained tectonic boundaries eastwards. This work is also a contribution to the Trans-Hudson–Superior Margin Metallotect project, a collaboration between the Geological Survey of Canada and the respective provincial surveys.

8. A number of faculty and student research projects have recently been completed or are in progress at Lakehead University, Thunder Bay:

Faculty Member	Research Topic(s)
Dr. P. Hollings	Fort Hope greenstone belt, with G.M. Stott (OGS)
Dr. P.W. Fralick	Precambrian sedimentary sequences (English River–Wabigoon–Quetico–Wawa subprovinces, banded iron formation, Sibley Group)
Dr. M.L. Hill	Structural geology of the Musselwhite Mine
BSc(Hons) Thesis:	
Lane, C.	The geochemistry and petrology of the Rabbit Islands Breccia, north-central Lake Nipigon (completed 2005)
MSc Theses:	
Johnson, J.	Copper-nickel mineralization and tectonic setting of the Norton Lake Region, Uchi Subprovince (completed 2005)
Laarman, J.	PGE mineralization and geochemistry of the Kitto intrusion
Magee, M.A.	Geology and geochemistry of the Mesoproterozoic of the Pillar Lake Volcanic Group, Armstrong area
Metsaranta, R.	Paleohydrology of the Mesoproterozoic Sibley Group
Patrick, M.	Geology and geochemistry of the Musselwhite gold mine
Richardson, A.	Geochemistry and petrogenesis of the Nipigon sills

Table 5. Publications received by the Thunder Bay North Resident Geologist's Office in 2005 (in addition to those on page 37).

Title	Author(s)	Type and Year of Publication
Proceedings of the 51st ILSG Annual Meeting, Nipigon, Ontario	Institute on Lake Superior Geology (ILSG)	51st ILSG Annual Meeting, proceedings volume, v.51, pt.1 (2005)
Geology and gold mineralization of the Beardmore-Geraldton greenstone belt	M. Smyk, P. Fralick and T. Hart	Field Trip Guidebook, 51st ILSG Annual Meeting, Nipigon, Ontario, v.51, pt.2 (2005)
Quaternary geology of the Beardmore–Nipigon area	P. Barnett	Field Trip Guidebook, 51st ILSG Annual Meeting, Nipigon, Ontario, v.51, pt.2 (2005)
A stratigraphic transect across the northern flank of the Midcontinent Rift near Rossport	P. Hollings and P. Fralick	Field Trip Guidebook, 51st ILSG Annual Meeting, Nipigon, Ontario, v.51, pt.2 (2005)
Geology and rare element pegmatites of the Quetico Subprovince near Nipigon	M. Smyk and S. Kissin	Field Trip Guidebook, 51st ILSG Annual Meeting, Nipigon, Ontario, v.51, pt.2 (2005)
Geology of the Black Sturgeon area	T. Hart	Field Trip Guidebook, 51st ILSG Annual Meeting, Nipigon, Ontario, v.51, pt.2 (2005)
Mineralization and tectonic setting of the Norton Lake region, Uchi Subprovince	J. Johnson	Unpublished MSc thesis, Lakehead University, Thunder Bay, Ontario (2005)
The geochemistry and petrology of the Rabbit Islands Breccia, north-central Lake Nipigon	C. Lane	Unpublished BSc(Hons) thesis, Lakehead University, Thunder Bay, Ontario (2005)

Table 6. Mineral deposits not being mined in the Thunder Bay North District in 2005.

Abbreviations

AF	Assessment Files	MLS	Mining Lands, Sudbury
CAMH	*Canadian and American Mines Handbook*	MR	Mining Recorder
GR	Geological Report	NM	*The Northern Miner*
MDC	Mineral Deposit Circular	OFR	Open File Report
MDIR	Mineral Deposit Inventory record	PC	Personal Communication

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Arseno Lake (53B14/NE)	Zn, Pb, Cu, Ag	1 million t @ 8.7% comb Zn-Pb, 1.5 opt Ag	Northern Dynasty Minerals Ltd. (37.5%) (CAMH 2005–2006, p.305)	1988 Annual Report Northern Dynasty Explorations Ltd.	Seeking joint-venture partners for further exploration
Brookbank (42E12/NW)	Au	1.325 million t @ 7.4 g/t Au indicated; 0.931 million t @ 7.0 g/t Au inferred	Ontex Resources Ltd. (CAMH 2005–2006, p.312)	Ontex, news release (March 26, 2003)	Discussions ongoing
Dobie Zone (52O06/NE)	Au	301 000 t @ 5.5 g/t Au	K. Kukkee, optioned to Canadian Golden Dragon Resources Ltd. (news release, September 01, 2005)	OFR 5869, p.161-162	Re-staked and optioned in 2005
Goss Lake (Frond Lake) (52P09/SW)	Au	278 000 t @ 7.4 g/t Au	Landore Resources Inc. (news release, February 07, 2006)	Landore Resources Inc. (news release, February 07, 2006) www.landore.com	2003–2005 ongoing exploration program as part of Mimintska Lake property
Headway Coulee (42L04/SE)	Zn, Ag	250 000 t @ 4.44% Zn, 1.32 opt Ag	N. Cox, M. Holt	OFR 5630, p.41	Diamond drilling and stripping – Big Mac zone 1995; Geophysics 1997
Howells Lake (52P10/SW)	Au	83 000 t @ 0.07 opt Au (+1.37% Sb) and 660 000 t (+3.1% Sb) with erratic Au values	Barrick Gold Corporation	OFR 5926, p.68	Last active in 1988
Jacobus (42E13/SE)	Cu, Ni	1 million tons @ 0.94% Cu+Ni	N.W.T. Copper Mines Limited (CAMH 2005–2006, p.289)	CAMH 2005–2006, p.289	Diamond drilling by SEG in 1993; Deposit open down-plunge
Juneau Lake (B4-7 Deposit) (42L05/SW)	Ni, Cu, PGE	2.1 million tons @ 0.87% Ni, 0.59% Cu	Landore Resources Inc. (CAMH 2005–2006, p.249)	www.landore.com	Diamond drilling 2003–2005
Karl Zeemel (53B09/SW)	Au	n/a	Placer Dome Inc.	n/a	Held by Placer Dome Inc. in 2005
Kasagiminnis Lake (52O08/SW)	Au	2.9 million t @ 5.8 g/t Au	K. Kukkee	NM Apr. 18, 1988	Airborne magnetic survey flown in 2004; restaked in 2005
Key Lake (42E11/NE)	Au	Indicated resource potential of 200 000 oz per 100 vertical metres	Roxmark Mines Limited (CAMH 2004–2005, p.368)	CAMH 2004–2005, p.368	Exploration last conducted in 1996-1997
Koval–Ohman (52O07/SE)	Au	471 589 t @ 5.81 g/t Au	Barrick Gold Corp.	OFR 5869, p.317	Inactive
Lavoie Lake (43D05/NE)	Cu, Ni	14.6 million t @ 0.58% Cu, 0.37% Ni	FNX Mining Company Inc. & Dynatec Corporation (CAMH 2005–2006, p.165)	OFR 5926, p.101	Last explored in 2002 by Aurora Platinum Corp. (now FNX Mining)
Lynx Canada (42L04/SE)	Cu, Ag	25 000 t @ 4.0% Cu, 300 000 t @ 2.0% Cu, 1.0 opt Ag	N. Cox, M. Holt	OFR 5630, p.41	Diamond drilling and stripping – Big Mac zone 1995

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Macleod–Cockshutt–Hardrock mines (42E10/NW)	Au	Open Pit resource: 1.92 Mt @ 0.079 oz Au per ton; Ramp resource: 1.16 Mt @ 0.127 oz Au per ton	Barrick Gold Corporation (formerly Lac Minerals Properties Inc.) (Resident Geologist's Files, Thunder Bay)	Asarco Exploration Company of Canada Limited, Ore Reserve estimate, 1993 (Resident Geologist's Files, Thunder Bay)	Former mine sites rehabilitated; last active exploration in 1996
Magnet Mine (42E11/NE)	Au	147 916 tons @ 0.45 oz Au per ton; 747 976 tons @ 0.49 oz Au per ton above 11th level	Roxmark Mines Limited (CAMH 2005–2006, p.356)	CAMH 2005–2006, p.356	Advanced exploration in 2001
Marshall Lake (42L05/NE)	Cu, Zn, Ag, Au	2.211 million tons @ 1.22% Cu, 4.2% Zn, 2.45 oz Ag per ton, 0.012 oz Au per ton	N.W.T. Copper Mines Limited (CAMH 2005–2006, p.289)	CAMH 2005–2006, p.289)	Diamond drilling 1996–97; Reinterpretation 1997, 2000
Mimiuska Lake (52P09/SW)	Au	Inferred resource of 346 900 t @ 5.3 g/t Au	Landore Resources Inc. (CCAMH 2005–2006, p.249)	www.landore.com	Diamond drilling 2003–2005
Nortoba–Tyson	Mo	72 000 t @ 1.04% Mo	Roxmark Mines Limited (CAMH 2005–2006, p.356-357)	www.roxmark.com	1865 m of drilling, stripping in 2005; application for Advanced Exploration
Norton Lake (42M14/NW)	Ni, Cu, Co, Pd	Measured and indicated resource of 2 258 654 t @ 0.67% Ni, 0.61% Cu, 0.03% Co and 0.46 g/t Pd	East West Resource Corporation–Cascadia International Resources Inc.–Canadian Golden Dragon Resources Ltd. (CAMH 2005–2006, p.93, 101, 143)	www.eastwestres.com	Geophysics, geochemistry, diamond drilling 2003–2005; Independent Mineral Resource Estimate generated in 2005
Northern Empire Mine	Au	83 723 tons @ 0.51 ounce Au per ton	Roxmark Mines Limited (CAMH 2005–2006, p.356)	CAMH 2005–2006, p.356	Mill upgraded and re-opened; surface ore processed in 2005
Paulpic (42L04/NE)	Au	200 000 t @ 0.231 opt Au	Canada Tungsten Inc.	OFR 5630, p.465	Last active 1987
Pickle Crow Mine (52O09/SE)	Au	n/a	Wolfden Resources Inc. (Pickle Crow Gold Mines Limited) (CAMH 2005–2006, p.436)	www.wolfdenresources.com	Mill construction completed by Donald Ross in 2006; production from top 100 m to begin in 2006
Thierry Mine (52O08/NW)	Cu, Ni, PGE	15.5 million t @ 1.92% Cu	Richview Resources Inc. (news release, January 03, 2006)	UMEX 1982; CAMH 2005–2006, p.325	Drilling and resource calculation 2004–2006
Umex–Dorothy Lake (52O06/NW)	Au	236 220 t @ 6.17 g/t Au	K. Kukkee; optioned to Canadian Golden Dragon Resources Ltd. (news release, January 11, 2005)	OFR 5869, p.260; NM, June 11, 1990, p.13	Staked 2004; optioned January 2005
Zulapa (42M12/SW)	Au	700 000 t @ 0.28 opt Au to 200 m	Eabametoong (Fort Hope) First Nation	OFR 5926, p.208	Inactive (within FN boundary)

*N.B. This table contains tonnage and grade estimates, referred to as "reserves" (indicated, possible, probable), which were determined at various times by methods largely unreported. It is not known if any or all of these estimates are in compliance with the reporting standards required by National Instrument 43-101.

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Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		LENGTH			
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
		AREA			
1 cm^2	0.155 0	square inches	1 square inch	**6.451 6**	cm^2
1 m^2	10.763 9	square feet	1 square foot	**0.092 903 04**	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
		VOLUME			
1 cm^3	0.061 023	cubic inches	1 cubic inch	**16.387 064**	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m^3
		CAPACITY			
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
		MASS			
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 90**	t
		CONCENTRATION			
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

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